

# Contractors and Engineers

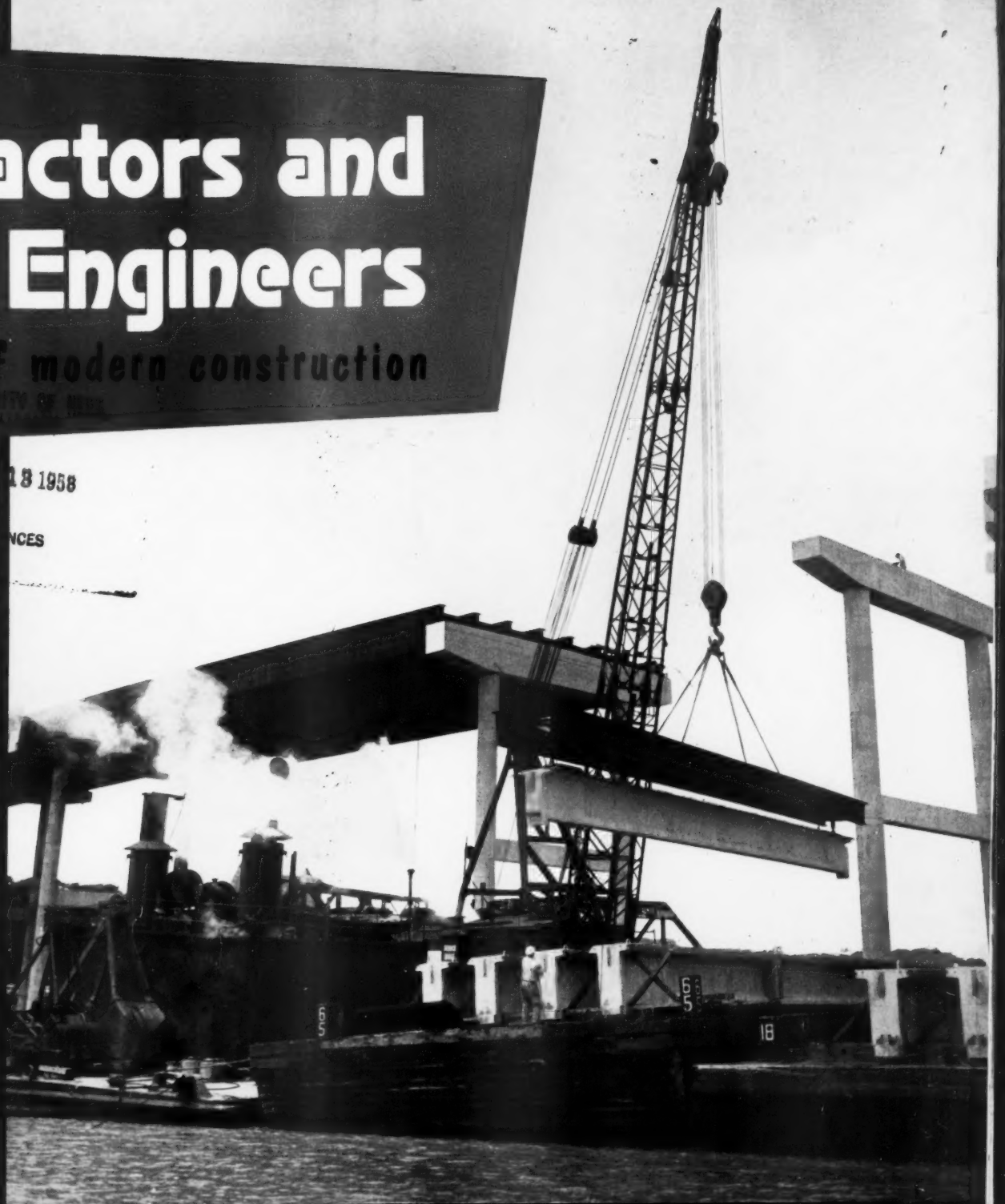
magazine of modern construction

SEP 18 1958

SCENCES

SEPTEMBER 1958

A Buttenheim Publication



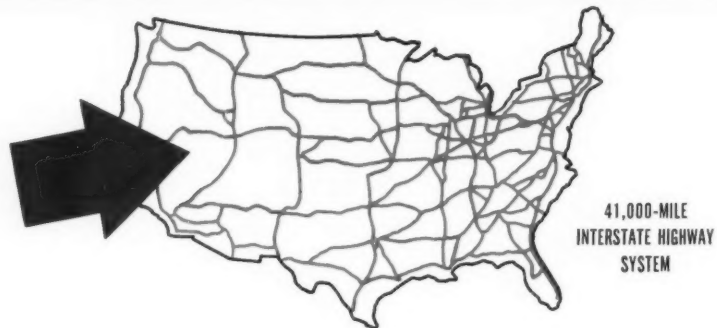
Post-tensioning Page 42



Erecting prestressed girders Page 30



Another step  
toward this goal



### Paving an Interstate Highway in Virginia with heavy-duty, flexible Texaco Asphaltic Concrete

The State Highway Departments are pushing ahead steadily with construction of their respective sections of the Interstate Highway System. Virginia and other States have paved a large mileage of these superhighways with hot-mix Texaco Asphaltic Concrete.

A hot-mix Texaco Asphaltic Concrete surface, on a foundation of either plant-mixed Asphaltic Concrete or Asphalt Penetration Macadam, will stand up under the heaviest Interstate Highway traffic year after year. This flexible type of construction costs substantially less than rigid paving designed for the same traffic. Maintenance costs of Asphalt paving also have been found lower by the highway departments of many states.

To the motorist, one of the chief advantages of Texaco Asphaltic Concrete paving is the velvet smooth riding quality of its resilient, joint-free surface.

Helpful information on heavy-duty Asphaltic Concrete, as well as other types of Asphalt paving, is supplied in two free Texaco booklets. Copies can be obtained without obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York 17  
 Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)  
 Jacksonville 1 (P.O. Box 749) • Denver 1 (P.O. Box 2100) • Philadelphia 2 (1411 Walnut St.)  
 Richmond 11, Va. (P.O. Box 1379) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)



# TEXACO ASPHALT

For more facts, use Request Card at page 18 and circle No. 201

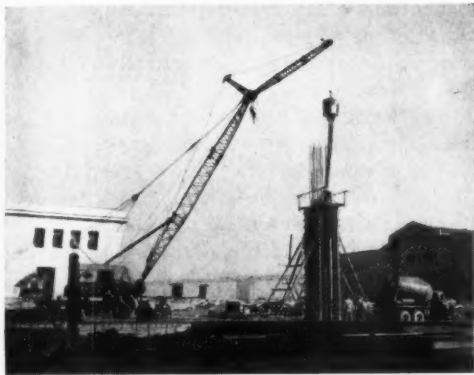


# CONTENTS

SEPTEMBER 1958

## Contractors and Engineers

magazine of modern construction



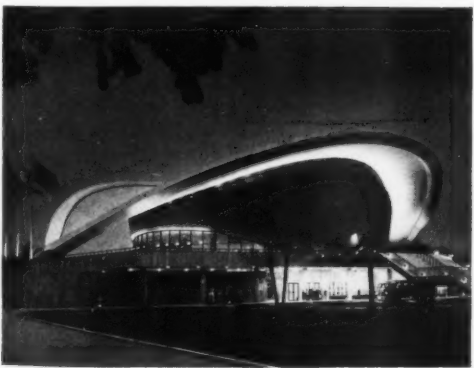
Concrete piers rise for freeway.

Page 10



Casting roof panel in Europe.

Page 20



Prestressed congress in Berlin.

Page 58



Boulder excavation on canyon road.

Page 80

**BUILDING** 6 Big cranes lift 90-ton kiln sections for cement plant

**HIGHWAYS** 10 Crews meet changing problems on freeway structure  
80 Headaches come boulder-size on canyon road grading job

**MANAGEMENT** 138 Planning and production: work simplification

**PAVING** 84 Mechanized spread, one paver work fast on concrete paving



20 Europe builds with concrete  
30 Tides play big role in erection of prestressed girders  
38 Contractor's block firm adds profits with prestressed work  
42 Two girders post-tensioned daily at bridge site  
48 Contractor's prestressing work grows into a division  
52 Freeway pier caps are cast in place and post-tensioned  
58 Delegates from 44 countries attend prestressed congress  
66 Prestress plant expands to meet growing market  
70 Post-tensioned 96-foot-long girders support roof  
78 Prestressed-concrete piles produced by spinning

**PRODUCT PARADE** 89 Description of new equipment and materials  
132 Listing of available literature

**DEPARTMENTS** 135 Avoid Legal Pitfalls  
142 Construction Camera  
87 Convention Calendar  
146 Distributor Doings  
4 Editorial  
69 Labor Review  
83 Manufacturer Memos  
18 Names in the News  
28 Surveying Washington



In the spotlight:

## Prestressed concrete

The construction industry and the civil engineers who usually direct its operations have often been criticized for being inarticulate in letting the world know of accomplishments in that field. It is gratifying, then, to observe that one of the newer branches of the industry, prestressed-concrete construction, is not remiss in that respect. Within 14 months, three significant meetings have been scheduled to report on progress and problems in prestressing.

Last year, from July 27 through August 2, the first World Conference on Prestressed Concrete was held in San Francisco with representatives from 29 countries present. From May 5 through May 10 this year, Berlin was the gathering place for the Third International Prestressed Concrete Congress which drew delegates from 44 countries (see page 58). The two previous meetings of the World Congress took place in London (1953) and Amsterdam (1955). This month, from September 22 through 25, the Prestressed Concrete Institute is holding its fourth annual meeting and convention at the Edgewater Beach Hotel in

Chicago. The PCI, with headquarters in Boca Raton, Fla., is only four years old but already has 500 members. The organization, international in scope and with many foreign members, has mailed announcements of its convention to some 11,000 potential registrants. This gives an idea of how big prestressing has grown and the number of people with a stake in it. The convention will also have an exhibit at which 39 suppliers will show and explain their equipment, materials, and services.

Prestressing is a field that has stirred up interest all over the globe. These international meetings can be a source of inspiration to all, even if local conditions do not always favor outright imitation of methods or techniques. Closer contacts and personal relationships among engineers of many lands advance the individual's own knowledge and understanding of the subject. Their countries also gain from any new ideas the delegates bring back with them. Such values cannot be measured with a yardstick, but they do exist.

Speaking of yardsticks, is it not

about time for this country to reappraise its system of weights and measures, and to consider the value of dropping the inch-foot-yard linear and square measure for the metric tables? Technicians from the U.S.A., coming into contact on the Continent with the meter and gram, almost always admit, albeit grudgingly, that there are advantages to the decimal system of measure and weight. And after using the metric system for a short time, the American is quite apt to concede that there is nothing very mysterious about it and that it has many advantages in speeding mathematical computations.

The adoption of the metric system could be another step in bringing engineers from all over the world more closely together. India is changing to the metric system of weight and measure, having successfully adopted a decimal currency system last April. Track and field teams from the U.S.A., competing in Europe this summer, raced metric distances rather than yards or miles. Standardization here would promote better understanding of such athletic events among both spectators and participants. It could do the same in engineering.

In this Prestressing issue of CONTRACTORS AND ENGINEERS we are presenting, in addition to a first-hand account of the Berlin Congress, the start of a series on European precast and prestressed concrete and eight articles on prestressing in the U.S.A. The stories, on work being done across the continent from New Jersey to California, range in subject matter from commercial plants, through beam and girder construction and erection techniques, to the manufacture of Spunpiles. For those who cannot make the conventions in person, here are some of the latest developments in the technique of prestressed concrete.

### CONTRACTORS AND ENGINEERS

A Buttenheim Publication

470 Fourth Ave., New York 16, N. Y.

**President and Publisher** • Donald V. Buttenheim  
**Editor** • William H. Quirk  
**Field Editors** • Ralph Monson  
Anthony N. Mavroudis  
William A. Allen  
**Assistant Editors** • William J. Dowdell  
William T. Darden  
Edward Mannix  
**Associate Editor** • Catherine J. Hearn

**Chairman of the Board** • Edgar J. Buttenheim  
**Vice President** • George S. Conover  
**Treasurer** • G. E. Carney  
**Pacific Coast Manager** • Albert T. Miller  
**Southern Sales Manager** • Curtis R. Buttenheim  
**Production Manager** • Edna A. Jones  
**Research Director** • Frank Kypreos  
**Art Director** • Peter Caramella  
**Asst. Art Director** • James B. Reilly

#### BRANCH OFFICES

470 Fourth Ave.,  
New York 16, N. Y.  
MUrray Hill 5-9250  
Myron MacLeod  
Roy T. Wagner  
David Hecht

Chicago 6, Ill.  
2100 Daily News Bldg.  
FI nancial 6-4611  
George S. Conover  
William J. Adams  
Robert Bormann

Cleveland 14, Ohio  
1814 Superior Bldg.  
CHerry 1-1755  
Robert C. Burton

Lookout Mountain, Tenn.  
121 North Hermitage  
TAylor 1-2853  
Curtis R. Buttenheim

Los Angeles 27, Calif.  
1870 Hillhurst Ave.,  
NOrmandy 5-5143  
Albert T. Miller  
James Stack



An American Revolver sets an 80-foot-long prestressed girder for the Petaluma Creek bridge near Novato, Calif. (Page 30.) Post-tensioning of girders for a twin bridge near Des Moines is being done by a Seco hydraulic pump driven by a Wisconsin engine. (Page 42.)

Associated Publications  
The American City School Executive

MART

Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 55, No. 9.  
\$5 a year, \$1 a copy in the United States and Canada. \$8 a year in other countries. Issued monthly.

©1958 by the Conmart Publishing Corp.  
A subsidiary of BUTTENHEIM PUBLISHING CORP.

CONTRACTORS AND ENGINEERS



## Prestressed-concrete men to convene in Chicago for fourth annual meet

On the 22nd of this month, the fourth annual convention of the Prestressed Concrete Institute will get under way at the Edgewater Beach Hotel in Chicago, Ill.

The keynote speaker at the 4-day convention will be Charles Luckman, partner in the architectural and engineering firm of Pereira & Luckman of Los Angeles and New York City. He will address the convention on the subject of marketing.

Also addressing the delegates will be Ralph E. Knight and James R. Hawkinson on "The Challenge of Marketing". Knight is a vice president and director of Research and Development of the Kaiser Aluminum & Chemical Corp., Oakland, Calif. Hawkinson is a professor of marketing in the School of Business of Northwestern University.

Thirty-nine companies connected with the prestressed-concrete field will have booths at the convention. Included among these are American-Marietta Co.; Basalt Rock Co., Inc.; Bethlehem Steel Co.; Bucyrus-Erie Co.; Container Corp. of America; CONTRACTORS AND ENGINEERS; Food Machinery & Chemical Corp.; Hopkins Volcanic Specialties, Inc.; Illinois Prestressed Concrete Association; and Intercontinental Equipment Co., Inc.

Also exhibiting are International Prestressing Corp.; Leschen Wire Rope Division, H. K. Porter Co., Inc.; Concrete Products Magazine; Marine Travelift & Engineering, Inc.; Master Builders Co.; Modern Concrete Magazine; Plant City Steel Corp.; and Preload Co.

Company displays are also presented by Prescon Corp.; Prestressed Concrete Institute; Raymond International Inc.; Remington Arms Co.; Rodgers Hydraulic, Inc.; Rods, Inc.; John A. Roebling's Sons Corp.; Sika Chemical Corp.; Silent Hoist & Crane Co., Inc.; The T. L. Smith Co.; Soil-test, Inc.; Star Precision Devices, Inc.; Stow Mfg. Co.; Stressteel Corp.; Superior Concrete Accessories, Inc.; Supreme Products Corp.; U. S. Steel Corp.; Union Wire Rope Corp.; Viber Co.; Vibro Plus Products, Inc.; and Wyzenbeck & Staff, Inc.

## Brussels Fair

To the Editor

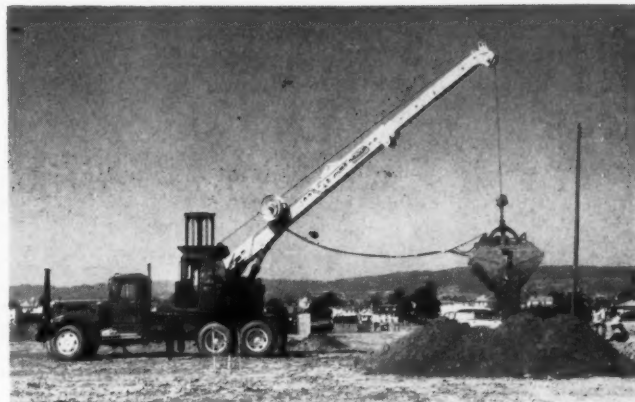
CONTRACTORS AND ENGINEERS

I was delighted to read your August editorial, "Missing the Boat at the Fair". You certainly voiced my opinion completely about the contents of the U. S. Pavilion at the Brussels World Exhibition. I hope all your subscribers will see and read it. I want to compliment you also for the wonderful photographs on page 6 in August under the heading "Brussels Fair Exhibits Construction Machinery", as well as the accompanying article.

George W. Katterjohn, Pres.

Katterjohn Concrete Products Co.  
Paducah, Ky.

FOOTINGS FOR A MULTIMILLION-DOLLAR shopping and housing center are dug by a Bucyrus-Erie H-5 Hydrocrane with a 1/2-yard clam. The crane, mounted on a Peterbilt truck, is being used by Utah Construction Co., Salt Lake City, Utah, the contractor on this South Shore Center in Alameda, Calif. The center is being developed on a 400-acre site near San Francisco Bay.



Look for this nearby Goodyear dealer sign for better tire values—better tire care.



## New SUPER HARD ROCK LUG

Tubeless or Tube-Type

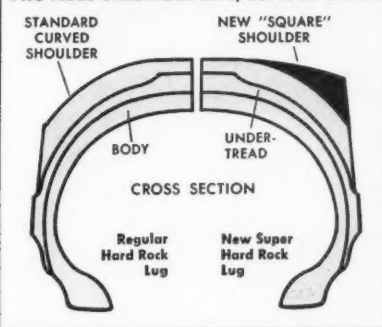
This new SUPER HARD ROCK LUG is *truly* wide-base, from tread-to-shoulder-to bead!

BONUS RUBBER—and plenty of it—right where you need it most. Result? Super traction, super flotation, super stability—and super resistance to shoulder snags and cuts.

Best news of all: **SUPER HARD ROCK LUG** costs no more than conventional wide-base off-roads! Get more tire for your money! Get this great new wide-base yardage champ at your Goodyear dealer's now.

Goodyear, Truck Tire Dept., Akron 16, Ohio.

SEE HOW DEEPER SHOULDER DEPTH PROVIDES STRONGER BITE, LONGER WEAR:



Built with **TRIPLE-TOUGH 3-T NYLON CORD!**



Like steel, tire cord must be tempered to be tough. Goodyear's exclusive 3-T process, involving Tension, Temperature and Time, triple-temper cord to make it **TRIPLE-TOUGH**—to give you longest tire life, lowest cost-per-yard!

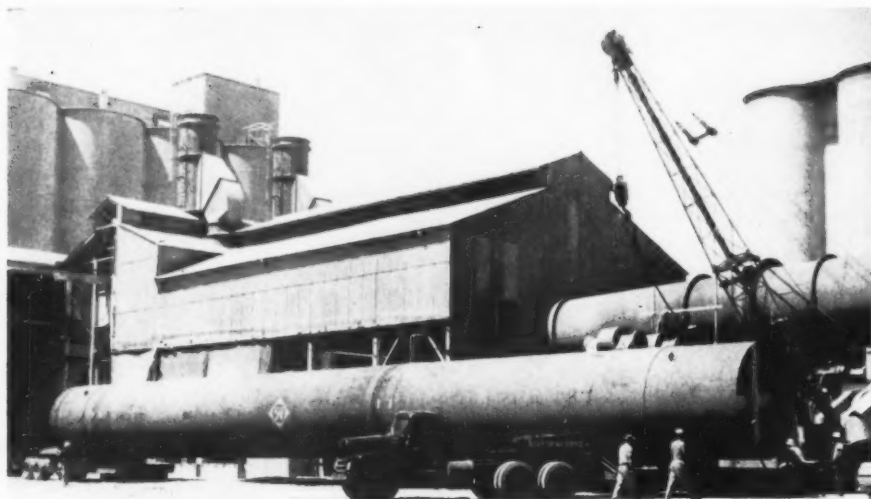


# GOOD YEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

For more facts, use Request Card at page 18 and circle No. 202





A P&H 30-ton crane prepares to lift one end of this 118-foot-long kiln section off one of the low-beds which brought it to the erection site. Note timber bracing inside end of section.

## Plant expansion job calls for big lifts

Setting an 11x230-foot kiln on piers to within a thousandth of a foot was one of the challenges faced by the Macdonald Engineering Co., Chicago, during a \$7.3 million expansion of the Monarch Cement Co., Humboldt, Kans.

Even getting the big steel kiln to the job was a considerable feat. Six railroad flatcars were necessary to transport the two sections of the 176-

ton steel cylinder. Hauling each section from the railhead to the project required two diesel trucks with low-beds. To make the mile haul, one truck headed forward carrying one end of the cylinder, and the other truck, heading in the opposite direction and driving in reverse, carried the other end.

Setting the 86 and 90-ton sections on the piers took big cranes and

plenty of patience. Since each cylinder was too heavy for cranes to lift directly to the piers, timber cribbing had to be used to step up each end of the cylinder 2 feet at a time. A 30-ton crane lifted up one end, while a smaller crane helped to place the timbers under the raised end. Then the large rig walked back to the lower end and lifted it 2 feet. Two cribs of timber at one-third points

supported the kiln section as it was stepped up to the top of the piers.

The kiln, which was added to the two already in use, has increased Monarch's production to 7,500 barrels per day. Construction on the \$7.3 million expansion project was started by Macdonald in August of 1956, and was completed this last April. Other facilities included in the expansion are a new laboratory building, a



**"AMCO Jobmasters  
do our jobs better, faster"**

B. B. CLOUD

Bruce Cloud, H. B. Zachry Company job superintendent, says, "the AMCO Jobmaster is doing an excellent job of processing dirt and water on our Reese Air Force Base project at Lubbock, Texas."

Contractors like Zachry find these rugged AMCO Jobmasters do their jobs better. In the above photo they are used to scarify and mix base. During rainy weather they aerate soil for proper drying and moisture balance.

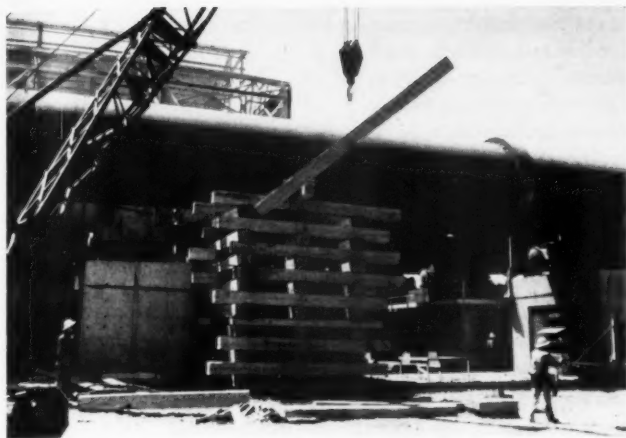
*If road building, dam construction, airport work or land reclamation is your job, there's a place for a Jobmaster to do one or several tasks.*

WRITE, WIRE  
OR CALL FOR  
MORE DETAILS  
TODAY!

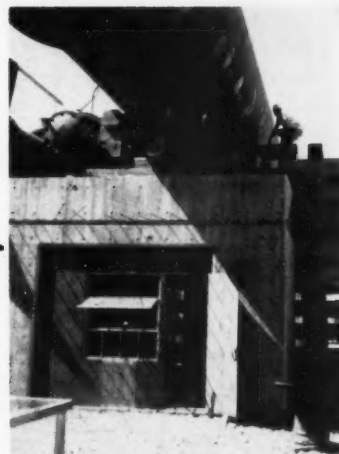
**ALEXANDER MANUFACTURING CO.**

P. O. BOX 407      SYcamore 8-4791      PICAYUNE, MISS.

For more facts, use Request Card at page 18 and circle No. 203



A crane lifts a piece of timber used in bracing the inside of one section of the kiln while it is jacked forward to couple with another section. Timber cribbing is temporary support for this 118-foot-long section.



Here the section of kiln has been moved onto the pier. Temporary cribbing at right was used to raise the section to this height. The contractor uses the space between the concrete walls of the pier as a temporary office.

maintenance and machine shop, and 12 storage silos.

#### New crushing plant

As part of the program a new limestone crushing plant, capable of processing 450 tons of rock per hour, was built in the nearby quarry. The plant contains an Allis-Chalmers 225-ton gyratory crusher that reduces shovel-size rock to 5-inch material. A hammermill in the plant further reduces the size of the rock to minus  $\frac{3}{4}$  inch. A belt conveyor system, also built under the program, carries the material for one-half mile to storage silos at the cement plant.

In making the portland cement, the crushed limestone is proportioned with shale and clay, and then flash-dried in a single-drum drying chamber. After a grinding process that reduces the mixture to a fine powder, it is pumped by air pressure through pipes to the receiving end of the rotating kiln.

As the rock-shale powder passes from the high to the low end of the kiln, it is heated to 2,850 degrees F, which turns the powder into white-hot clinkers. The clinkers drop from the discharge end of the kiln onto an air-quenching cooler that cools the clinkers before they are conveyed to the temporary storage piles. After a small percentage of gypsum rock is added to the clinkers, the mixture is ground and sized to make portland cement.

Along with the construction of the new kiln, it was necessary to build a steel-frame boiler building connected to the feed end of the kiln. The boiler, which is fired by the exhaust gases from the kiln, provides steam for the turbogenerators of the plant. At the discharge end of the kiln another steel-frame building was built to enclose the Allis-Chalmers 4.5 x 70-foot clinker cooler. Heat is supplied to the kiln at its lower end by either natural gas or coal.

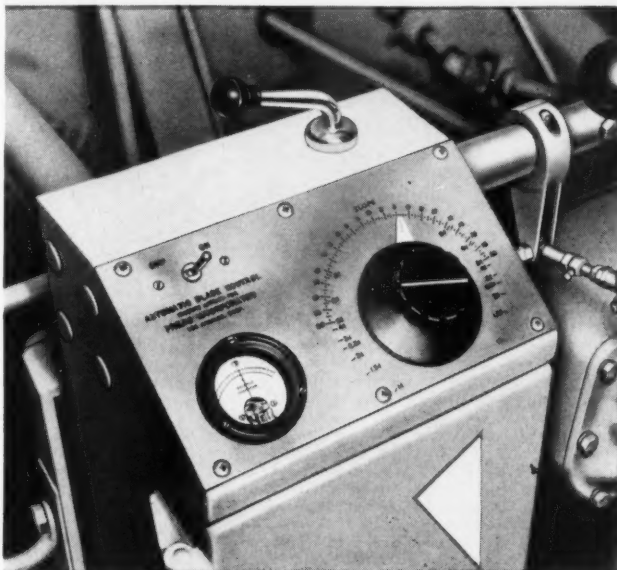
#### Kiln rests on four piers

The rotating kiln, supplied by Allis-Chalmers Mfg. Co., is supported by four reinforced-concrete piers varying in height from 18 to 12 feet. Each pier carries a two-wheel trunnion. The trunnion supports the rotating

(Continued on next page)

For more facts, circle No. 204→

## JOB REPORT FROM NEVADA ON AUTOMATIC BLADE CONTROL -AVAILABLE ONLY FOR CAT MOTOR GRADERS



JUST DIAL THE SLOPE ON THIS  
PRECAT AUTOMATIC BLADE CONTROL...



...IT CONTROLS BLADE SLOPE WITHIN  
 $\frac{1}{8}$ " IN 10', REGARDLESS OF TERRAIN!

From job after job, reports are coming in about the performance of the Precat Automatic Blade Control, a major feature introduced last year for exclusive use on Cat Motor Graders. How's it doing? Here's a typical answer from Superintendent Bill Hanson of Isbell Constr. Co., Inc., Reno: "Work on finish is easier with the automatic control and is very accurate." His remarks are the result of work on a 9-mile, 4-lane freeway project near Carson City, Nevada. As for accuracy, controlling blade slope within  $\frac{1}{8}$ " in 10' can be done!

#### More improvements for the No. 12

Though the No. 12 has earned the reputation of "standard of the industry," Caterpillar constantly looks for and finds ways to improve this machine. Automatic blade control is an example. Here are some other, even more recent improvements:

**Longer main frame**—a  $4\frac{3}{4}$ " longer main frame adds extra clearance between toe of blade and front tire for all blade positions.

**Better visibility**—31% more glass area in cab increases operator's visibility and efficiency.

**Increased operator comfort**—new seat adjusts fore and aft. Back rest adjustable, too. Cab 6" higher and cab roof insulated to reduce noise level.

**Increased versatility**—4" longer tandem provides plenty of clearance for chains even when machine is equipped with large 14.00-24 tires.

#### Have you seen the improved No. 12?

Because of these and other new features, you can count on the No. 12 for even better work—and faster. Look it over at your Caterpillar Dealer. Better still, look it over in action. Have him demonstrate a No. 12 equipped with automatic blade control. See for yourself how it steps up production!

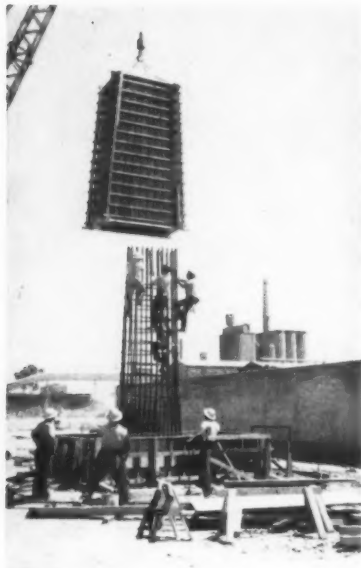
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

FOR HIGH PRODUCTION,  
EQUIP YOUR CAT. MOTOR GRADERS  
WITH AUTOMATIC BLADE CONTROL





A 14-foot-high section of pier form is lowered into place over a reinforcing cage wired to dowels rising from the footing. A Sonotube split in half fashions the circular ends of this form.

(Continued from preceding page)

steel "tire" that encircles the kiln. The kiln is driven by a General Electric 75 to 100-hp motor that must keep the kiln rotating 24 hours a day, 7 days a week. In case there is a power failure, a Buda gasoline engine is ready to take over the job.

The design of the piers represents a departure from the type of foundations supporting the original two kilns. Instead of being a solid block, the piers of the new kiln are built with two 4-foot-thick walls supporting a 5-foot cap. The block footing is both keyed and doweled into the natural rock.

Concrete was supplied at bargain prices from the company's own concrete plant, located only a few hundred feet from the kiln. The concrete was carried by bucket on a truck to a crane. To place the concrete through the maze of reinforcing steel, a 6-inch-diameter tremie was used.

Great care was taken in placing the trunnions, which were mounted on top of the piers. In order to get the trunnions within a thousandth of a foot, the base plates were shimmed to grade and grouted in place.

#### Kiln erection

The kiln was erected in one 118-foot, 86-ton section and one 112-foot, 90-ton section. Each section was brought alongside the piers by the low-beds which carried them from the railhead. A P&H crane and a Northwest, both 30-ton rigs, helped shift the big cylinder from the low-beds to two timber cribs. While one 30-ton rig lifted up an end of the cylinder, a  $\frac{3}{4}$ -yard crane helped place the timber on one of the cribs, raising its height 2 feet. The big crane then walked to the low end of the cylinder and pulled it up 2 feet.

In this manner, the cribbing was built up alongside the piers to a height that would clear the trunnions. Using timbers to bridge across to the piers, the cranes worked the kiln sections over until they were directly above the trunnions. The kiln was not yet set on the trunnions, however, but rested on cribbing either built up from the ground or supported by the piers.

For convenience in construction, a

gap of about 14 feet was left between the two kiln sections. In this position, the cranes could slip the 8½-inch-thick steel "tires" over the open ends of the two cylinders and work them into position. The tire was connected to the cylinder by means of spacer plates that were welded by a Lincoln 200-amp welding machine.

After the tires were in place, the lower section of the kiln was jacked forward to close the gap between the two sections. The sections were then welded together and the kiln lowered onto the trunnions. One of the last steps in building the kiln was lining

the interior with firebrick.

#### Personnel

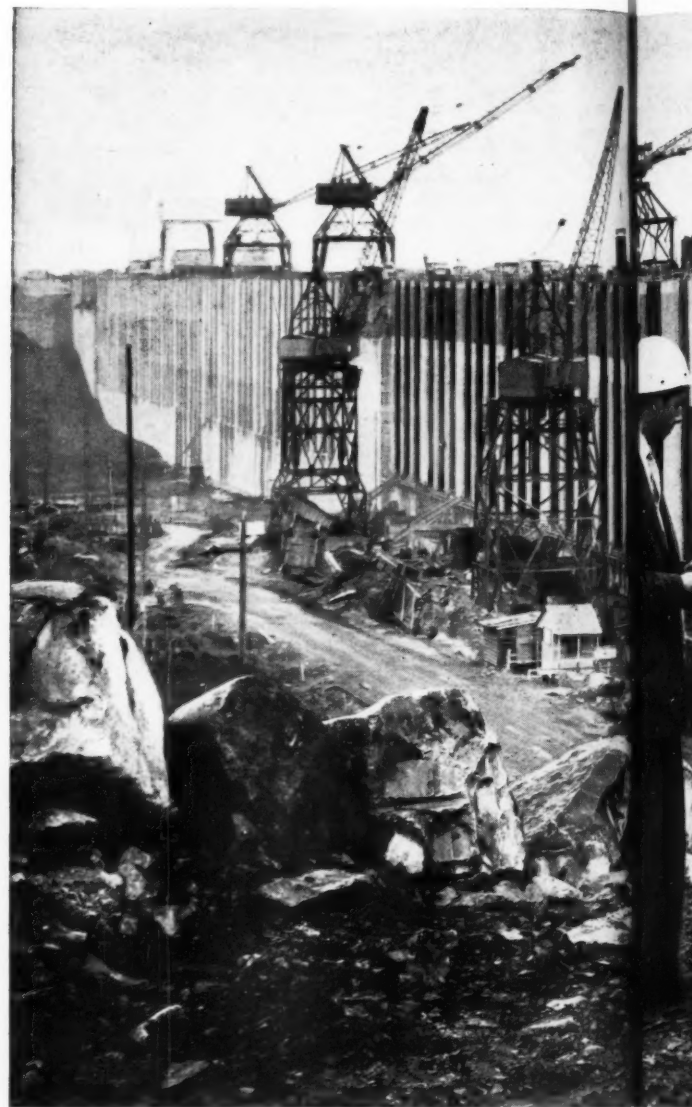
For Macdonald Engineering Co., Al Kays was the superintendent. Supervising the construction for Monarch Cement Co. was H. Fegely, vice president of operations, and Glen Shook, chief engineer.

THE END

#### Book on how to estimate construction costs

The second edition of "Estimating Construction Costs", by R. L. Peurifoy, tells in detail how to estimate

**AN ESTIMATED** 73% of the petroleum requirements on major St. Lawrence Seaway projects have been supplied by Texaco. Picture shows Bill Partisch (left), Texaco Lubrication Engineer, and Vic Pandolfi, Equipment Superintendent, discussing the Texaco Lube Plan, represented by the numbered barrels. In background, upstream side of Barnhart Island Power Dam and Robert E. Saunders Generating Station designed to generate 1,880,000 kilowatts. Construction of the 3,230-ft. wide, 167-ft. high concrete gravity dam involved excavation of more than 2,500,000 cu. yds. of earth and placing of approximately 2,000,000 cu. yds. of concrete. Dam is a joint project of the Power Authority of the State of New York and the Hydro-Electric Commission of Ontario. Contractors for both U. S. and Canadian sides used Texaco lubricants and fuels, the Canadian contractors being supplied through McColl-Frontenac Oil Co., Ltd., Montreal, a Texaco subsidiary.



## NO MORE THAN SIX SERVE ONTH

### Texaco Plan reduces needed lubes to no more than six

MASSENA, N. Y.—Barnhart Island Power Dam is the world's second largest hydro electric project (first: Grand Coulee).

A Texaco lubrication plan and the service that makes it work are credited by the contractor's Equipment Superintendent with playing a significant role in keeping the contractors' equipment in an operating condition.

"The Texaco Lube Plan has really helped," says Victor Pandolfi, Equipment Superintendent for Perini, Walsh, Morrison, Kiewit, Utah Companies, General Contractors. "We've used no more than six high quality lubricants for the entire project instead of 15 or 20. There's been less inventory. It's been simpler to service and protect the equipment. We've avoided mistakes in lubrication, and saved manhours and money."

#### Most Contractors Use Plan

The Barnhart Island Power Dam is just one of the St. Lawrence Seaway projects on which the Texaco Simplified Lubrication Plan has been used. It's estimated that 73% of the petroleum requirements for the Seaway have been supplied by Texaco, and that most maintenance programs have included the Lube Plan.

The Plan has been endorsed for the following reasons: proper lubricants are recommended; less storage needed, reduced confusion and misapplication; lower handling and maintenance costs; less time lost by equipment; fewer lubricating errors; time and money saved.

#### Developed on the Job, For the Job

The Texaco Simplified Lubrication Plan was developed



construction costs of all kinds and describes the various methods of preparing such estimates. Production rates for labor and equipment are included, plus costs of materials, equipment, and labor for a wide variety of projects; indirect costs—insurance, taxes, bonds; a more complete coverage of Workmen's Compensation Insurance and other types of insurance.

Tables give ranges in production rates, and there is more comprehensive coverage of the building trades. New chapters cover additional equipment for and methods of drilling

rock; stone masonry; and frame residences—carpentry, interior trim, and millwork.

Priced at \$10.75, the book may be purchased from McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

#### CRSI appoints Rice

Paul F. Rice, former technical director of the American Concrete Institute, has joined the staff of the Concrete Reinforcing Steel Institute as assistant to the managing director, Harry C. Delzell.

#### Prestressing Company forms new division

The San Antonio firm of Prestressing, Inc., has formed a new SPAN-BLOCK Division. This division plans to license block manufacturers to make and sell a patented floor and roof system, which is composed of machine-made blocks formed into prestressed planks.

The plank incorporates a new method of grouting the contact faces between the blocks, which is said to eliminate grinding and assure positive transfer of the pretensioning force.

The 16-inch-wide planks can be fabricated in 4, 6, and 8-inch depths, with roof spans ranging up to 34 feet and floor spans to 30 feet.

Harvey R. Livesay, Jr., is manager of the new division.

#### Revised edition of book on elementary surveying

A ninth edition of "The Principles and Practice of Surveying, Vol. 1, Elementary Surveying", by Charles B. Breed and George L. Hosmer, has been published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. In this edition, a section has been added describing types of surveys and giving sources of maps and surveying information.

The treatment of measuring distances has also been expanded and a description is given of the subtense bar. A new chapter has been added giving elements of aerial surveying and photogrammetry. The 717-page book abounds in tables, diagrams, formulas, and pictures. A list of problems and references appears at the end of each chapter.

Priced at \$6.50, the book may be purchased from the publisher.

#### NCSA issues booklet on operating problems

"Discussion of Operating Problems", a transcript of the Operating Session of the 1958 convention of the National Crushed Stone Association, is available at \$2 per copy. The booklet contains rules for measuring quarry efficiency; studies on the efficiency of quarry operations; recent trends in plant design; and timely tips on operating problems.

Copies of the booklet may be purchased from the NCSA, 1415 Elliot Place N. W., Washington 7, D. C.

#### Prestressed-concrete double-tee members

Volume 9 of its "Prestressed Concrete Design" series is now available from Leap Concrete, Inc. This handbook covers the 5-foot-wide x 19-inch-deep double-tee roof members. Data included covers safe superimposed loads in the span range of 20 feet through 61 feet, using a 7/16-inch-diameter strand with both parallel and depressed designs. A data sheet for each strand pattern gives spans, loadings, prestressing force initial prestressing force, principal concrete fiber stresses, camber, deflection, release strength of concrete, and 28-day concrete strength.

Complete technical information is given on 116 different combinations which will enable an architect or engineer to specify quickly which double-tee to use under any given condition. Also included are a section on basic design of prestressed concrete and a table of loadings for nine other prestressed structural members, such as the channel and keystone joist. The book abounds in diagrams.

Priced at \$2, the handbook may be purchased from the company, P. O. Box 1053, Lakeland, Fla.



## ON THE ST. LAWRENCE POWER DAM

on-the-job experience in all types of construction work. It's tailor-made for the work to be done. Lubricants vary from job to job because each Plan is set up to meet the specific needs of a specific project. But regardless of the job, the basic fact remains that—no more than six lubricants are needed to handle all major lubrication. Here are the six lubricants, illustrated above, used on Barnhart Island project:

For engines: *Texaco Ursa Oil Super Duty Special*; (2) chassis, wheel bearing and general grease lubrication: *Texaco Marjak Multi-Purpose 2*; (3) for hydraulic units: *Texaco Regal Oil R&O*; (4) for transmissions and differentials: *Texaco Universal Gear Lubricant EP*; (5) for wire

rope and open gears: *Texaco Crater*; (6) for enclosed reduction gears: *Texaco Gear Lube HD*.

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your project. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

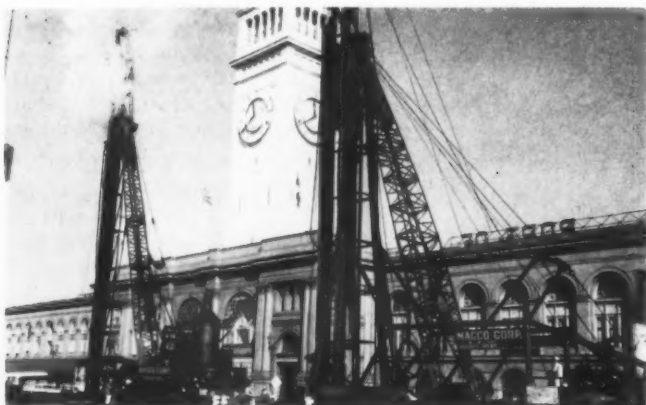
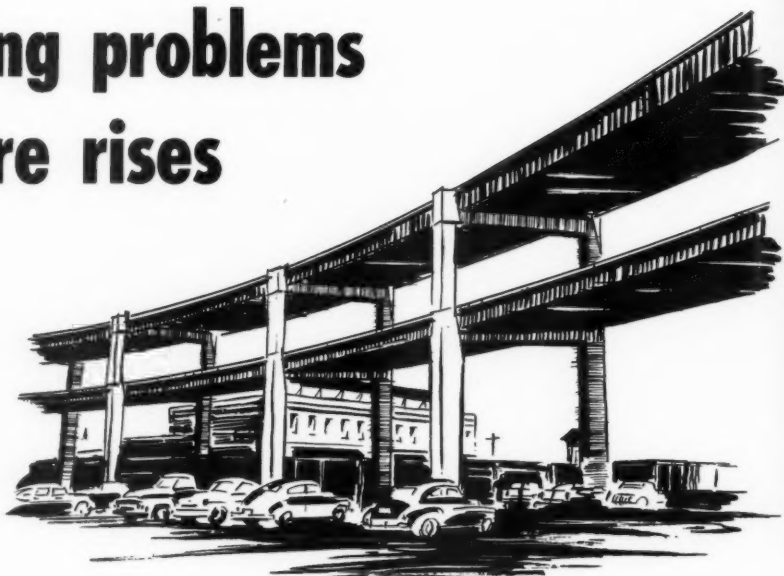
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 205

# Crews meet changing problems as freeway structure rises

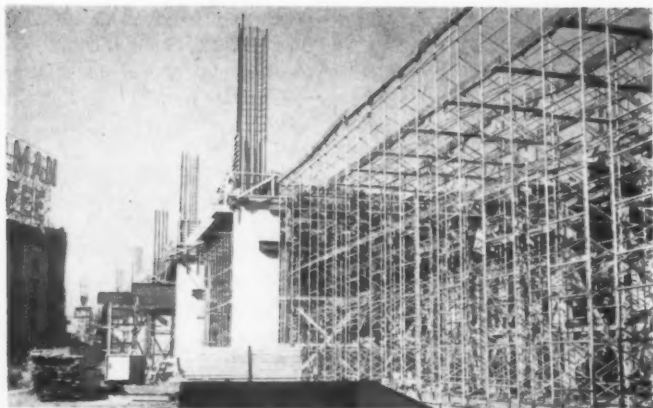
by RALPH MONSON, field editor

*The still unfinished double-deck Embarcadero Freeway runs 1.2 miles along the congested San Francisco waterfront to connect with approaches to the San Francisco-Oakland Bay Bridge. Throughout construction, local traffic had to continue using the existing roads bridged by the structure, and a rail line under the elevated freeway had to be in use. Different problems cropped up as every new stage of the work was reached. Here's the way they were met . . .*



At the start, layers of paving and sidewalk make pile driving for the pier footings difficult. Quiet Myrt, right, a skid rig with 90-foot leads, and Silent Sue, a converted Marion steam shovel, handle the work.

A Gar-Bro 1-yard bucket with a long Gar-Bro rubber tremie is used by a Lima 60-ton crane to get transit-mix concrete to forms for a column. The rig's 70-foot boom and 30-foot jib made it possible to use this method to cast columns to lower-deck level.



A scaffolding system, devised by Charles L. Harney, Inc., supports lower-deck forms. The 6 x 12 stringers are in place on brackets on the top jacks of the scaffold. On these are 2 x 6 joists to support plywood decking.

Using a system of tubular-steel scaffolding that was fabricated in its own shops, Charles L. Harney, Inc., general contractor for the Embarcadero Freeway in San Francisco overcame a number of difficult shoring and forming problems.

Building the double-deck elevated highway down the middle of a busy street in the heart of a city is an extremely complicated job at the best. When a railroad that runs down the center of the street has to be kept in operation throughout the construction period, the complications, and especially shoring problems, increase.

Harney has not only met these and many other problems, but has planned and conducted the job so well that it is ahead of schedule and will probably be completed well before the July, 1959, contract deadline.

The freeway, being constructed under a \$7.5 million contract with the California Division of Highways, connects with the approaches to the San Francisco-Oakland Bay Bridge on the south and carries traffic northerly about 1.2 miles along the busy San Francisco waterfront. On and off ramps at Broadway now mark the end of the structure, but there is provision for future extension of this freeway toward the Golden Gate Bridge.

The freeway is a two-level structure carrying the northbound traffic on the lower deck and southbound traffic on the upper level. The original street, retained for local traffic, is obstructed only by the columns supporting the structure.

Since a railroad serving the docks and adjacent warehouse area runs at ground level under the structure, the first deck has to be high enough to provide a minimum 23½ feet of clearance above the rails. The second deck has a 15-foot minimum clearance above the first to accommodate trucks and trailers.

## Decks are box girders

Structurally, each deck is a heavy box girder spanning an average of about 85 feet between piers. Most of the piers have two columns from the ground to the first deck, with a heavy cap spanning between the columns to support the box girders. The exterior columns continue on up to support a second cap and the box girders of the second deck.

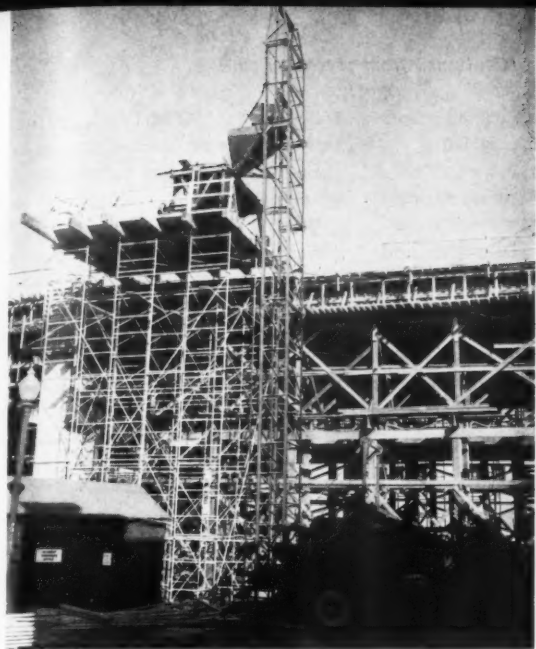
While ramps make for many variations of cross section, the typical section has a 52-foot-wide four-lane roadway with a 2-foot-wide raised curb and railing section on each side. Columns are outside this section.

Supporting the pier footings are



Heavy steel beams spanning the railroad under the structure support the forms and also provide clearance for trains serving the dock area. This same method was used to bridge intersecting streets.





Though a truck crane lifted concrete to a hopper for all large pours on the lower deck, concrete for small pours was handled by this Wagner Mixermobile and tower.



The bottom deck stands ready for concrete after the lost soffit form and reinforcing are placed. Just beyond, crews form stem walls. In the background is the San Francisco-Oakland Bay Bridge and the tower of the Ferry Building, a well known Frisco landmark.

more than 160,000 linear feet of steel H-piles, most of which are 14-inch, 102-pound piles ranging up to 235 feet in length. Individual footings have 10 or 11 piles, each driven to 125 tons bearing in a dense sand and gravel stratum deep underground.

Most other structures in the area are founded on gravel strata at a somewhat higher elevation, but many of these have been settling. To avoid the possibility of settlement with the extremely heavy pier loadings of this structure, the contractor pushed piles down through the first gravel bed, then through strata of dense blue clay to the more secure footing of a sand and gravel bed which overlies bedrock.

Concrete footings about 7 feet below street level cap the piles and support the big columns of the structure. These columns measure 4.5x6 feet in cross section up to the first deck, and step down to 4.5x4 feet between the first and second decks. Most of the caps spanning between the columns at the first deck level are 4.5 feet wide and 9 feet deep. For the second deck, they measure 4 feet wide and 8.5 to 9.5 feet deep, and some of them span as much as 80 feet at ramp entrances.

Some of the exceptionally long top-deck caps are prestressed. (See "In-

tegral Pier Caps Are Post-Tensioned", page 52, for details of the post-tensioning operation.)

The box-girder section is continuous from hinge to hinge over several piers. In typical cross section, the box girders are 4.5 feet high with a 5½-inch bottom slab and a 6¾-inch top slab. Longitudinal stem walls joining the top and bottom slabs are spaced about 7.75 feet apart and are 8 inches thick near the center of the span. These stem walls flare out as they approach the pier caps. There are also internal transverse diaphragm walls.

This is a typical design being used by the California Division of Highways for elevated freeways and cast-in-place grade-separation structures. It combines some structural advantages with a pleasing appearance.

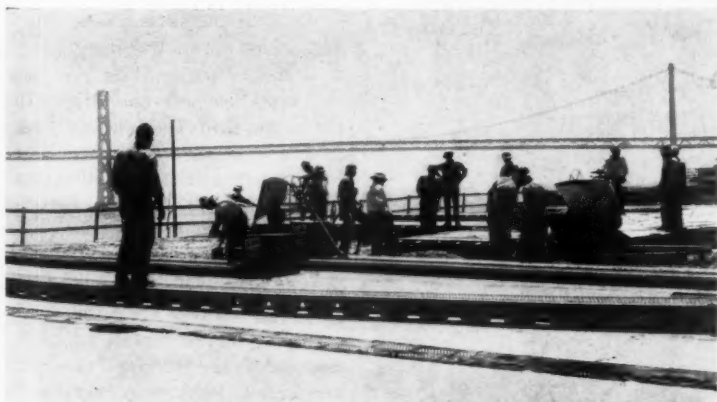
#### Hard driving

Using a Gradall, the contractor excavated five to seven feet below street level for the column footings. This was anything but easy digging, for old pavements, sidewalks, and other structures in the area had settled and new ones were built over them. The remains of many of these old structures were uncovered in digging the holes. Many of these old struc-

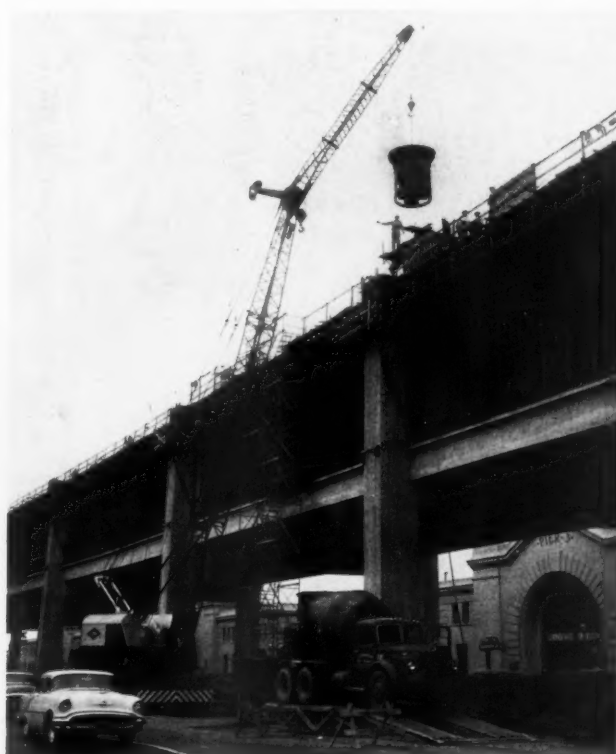
(Continued on next page)



When pier caps for the second deck were started, moving materials on the deck threatened to become a problem. A 10-foot-wide aisle in the shoring made it possible to move even this P&H 10-ton crane.



As the Cmetco buggies dump concrete to the form, the mix is consolidated by Homelite vibrators and finished by Clary screeds. Installation of guardrail and a lighting system will complete the work.



The big Lima hoists all concrete to the hopper during pours for the second deck. The Mack truck with Cal-Rex transit mixer keeps the crane supplied. The stairway tower provides access to the deck.





A Gradall handles the tough job of excavating for the column footings. Excavation was carried from five to seven feet below street level, through layers of pavement and sidewalk that had settled and been covered with new ones through the years.



## Wherever You Are Spicer Is There With The Right PTO

When time is important . . . think of Spicer. Even if you're on site, your Spicer distributor is as close as the nearest telephone.

Across the nation, your Spicer distributor carries a complete line of all types of PTOs for quick replacement, plus all the joints and shafts you need for a complete auxiliary power installation. Ask your distributor about the Spicer line, or write Dana Corporation, Toledo 1, Ohio.



### DANA CORPORATION • Toledo 1, Ohio

#### DANA PRODUCTS Serve Many Fields:

**AUTOMOTIVE:** Transmissions, Universal Joints, Propeller Shafts, Axles, Power-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.

**INDUSTRIAL VEHICLES AND EQUIPMENT:** Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.

**AVIATION:** Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.

Many of these products manufactured in Canada by Hayes Steel Products Limited, Merrifon, Ontario.

**RAILROAD:** Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.

**AGRICULTURE:** Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take Off Joints, Clutches, Forgings, Stampings.

**MARINE:** Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.

**DANA**

**Spicer**

For more facts, use Request Card at page 18 and circle No. 206

(Continued from preceding page)

tures were encountered at even deeper levels when pile driving started.

Macco Corp., Paramount, Calif., subbed the pile driving and drove most of the piles with two rigs affectionately named Silent Sue and Quiet Myrt. Their mellow voices were soon recognized by all who lived within a radius of a mile or more of the project.

Silent Sue is an old Marion steam shovel converted to a pile driver. Her 65-foot boom handled 60-foot fixed leads on this work, and her 140-hp oil-burning boiler supplied steam for pile driving as well as for operating the rig.

Quiet Myrt is a skid rig built by Macco. She has a 50-hp oil-burning

boiler and mounts 90-foot leads. Both rigs drove the big H-piles with single-acting 5-ton steam hammers that develop 32,500 foot-pounds per blow.

Before piles were driven, Quiet Myrt punched a hole through the old concrete and other underground debris with a heavy steel spud. This is a 14-inch beam heavily reinforced and built up to stand the hard driving. It is 36 feet long and is usually driven most of that depth. Quiet Myrt then pulled the spud with an extractor so that the first section of the pile could be set.

Since the piles range from 135 to 235 feet in length, it was necessary to make one or two splices in the leads as each pile was driven. After getting through the old debris, the piles drove quite easily through a varying depth of bay mud to the first gravel layer. Here the driving became more difficult. In fact, though the desired bearing could be developed on most of the piles in this layer, they were carried on down to eliminate the possibility of settlement.

Below the first gravel layer, the piles drove slowly but steadily through dense blue clay to final firm bearing in the very dense layer of sand and gravel overlaying bedrock.

#### Columns and footings

When the piles were driven to bearing and cut off to grade, the concrete footings were poured directly from the transit mixers.

Columns were formed and cast from the footings up to the level of the lower deck caps in a single unit. The combination wood and metal column forms were braced with 4x4 wales and tied through with she-bolts.

To pour these high columns, Harney took advantage of a big 60-ton truck crane on the job. A 70-foot boom and 30-foot jib gives this rig a good high reach. A long rubber tremie attached to a 1-yard concrete bucket was used to place concrete for the bottoms of the columns. This meant that the crane had to lift the bucket practically twice the height of the column in order to get the tremie started into the top of the form. Transit-mix concrete for the columns, as well as all other parts of the structure, is being supplied by Consumer's Rock & Cement Co.

#### Tubular-steel shoring

While the pile drivers were still at work on some of the footings, Harney's crews began building the pier caps and the lower-deck box girder. The contractor, with experience on similar structures, has developed a system of tubular-steel scaffolding well adapted to this type of work. The components were fabricated in his shop.

Square steel base plates were welded to the lower jack screws which support each scaffold tower leg. These plates were nailed in place on wooden sills laid on the old street pavement. The scaffold towers were then assembled in place, section by section. The vertical sections simply fit together with sleeves. Diagonal braces fit over

CONTRACTORS AND ENGINEERS

Equipment at work early on the Embarcadero Freeway project included a Warner & Swasey Gradall for excavating column footings and two pile drivers using McKiernan-Terry S-10 single-acting steam hammers. One was the Silent Sue, an old Marion steam shovel converted to a pile driver. The other, a skid rig, also used a McKiernan-Terry No. 4 extractor for pulling the spud used to start holes for piles.

Equipment used in setting scaffolding and in forming included P&H and Michigan 10-ton cranes, a Clark Clarklift, a Remington stud gun, and Plycrate, a form of plywood.

Among concrete-placing equipment were a Lima 60-ton truck with 70-foot boom and 30-foot jib; Gar-Bro 1 and 2½-yard buckets, tremie, and concrete hopper; Cal-Rex mixers mounted on Mack trucks; and a Wagner Mixermobile. Cmetco power buggies and Clary power screeds were also on the job, and vibrators included rented sets of Homelite units with generators.

pins on the vertical sections and are held in place with cotter keys. A small crew using 10-ton motor cranes sets the scaffolding rapidly.

A screw jack in the top of each tower leg carries a channel-shaped bracket which supports the 6 x 12 stringers on which the deck form is built. These stringers fall directly under the box girder's longitudinal stem walls, where the maximum load is concentrated. Across the stringers, 2 x 6 joists at one-foot centers support the ¾-inch Plyform decking for the lower slab of the box girder.

The jack screws in the top and bottom of each leg make it easy to plumb the towers and to bring the deck forms to exact grade.

This forming is relatively simple and would have been very fast to set and strip, but complicating factors were many. Each pier cap being formed had to have heavy shoring to support the huge volume of concrete concentrated in the cap. In most cases, 8 x 8 wood posts with 6 x 12 stringers supported the cap forms, with steel beams being used to span across roadways and railroad tracks.

Shoring of the lower deck was made particularly difficult by a railroad. At the beginning of the project, 5,570 linear feet of track had been relocated to give adequate clearances from the piers of the structure. The main line runs under the elevated highway for about half of the structure's length.

The deck shoring had to provide enough clearance so that the railroad could operate continuously during construction. This meant that a great many heavy steel beams had to be erected on big timber supports spanning the tracks. A similar system spanned intersecting streets.

#### Forming box girders

With the shoring and deck in place, the forms for the exterior walls of the box girder were erected and braced from the outside. At the outside of this form, a walkway with railing protected workmen from falling. Reinforcing for the bottom slab and the stem walls was then set in place. Richards Reinforcing, Oakland, Calif., is placing all reinforcing on the job.

Stem-wall forms, made of plywood backed with 2 x 4's, were set up on precast-concrete blocks the depth of the bottom slab and tied with snap ties. When runways for the concrete buggies were set in the spaces between the stem walls, the section was ready

(Continued on next page)



Early in the job, this International tractor with overhead boom attachment put down wood sheeting for the footing holes with a pneumatic sheeting driver. Air for the driver is supplied by a Schramm compressor.

## RIPS DEEPER THROUGH FROST AND ROCK



**C-R-C KELLEY RIPPER has proven successful in:**

- PIPELINING
- HIGHWAYS
- STRIP MINING

• Deep ripping through the hardest of materials, frost and rock, comes easy to the C-R-C Kelley Ripper. This means more production for dozers, ditchers, or scrapers whether you're excavating highways, strip mines, or pipelines.

Maximum ripping depth is seven feet for the largest ripper. For right-of-way clearance two shanks can be used. Hydraulic pistons maintain a constant ripping depth with no danger of the shank raising clear of the ground during a pass.

C-R-C manufactures a full line of rippers to fit almost every tractor. Get full details by calling or writing C-R-C in Houston, Texas.



C-R-C Kelley Coal Ripper shown making a pass through a strip mine. Penetration depth is a maximum 7 feet.

SERVING PIPELINERS SINCE 1933

**CRUTCHER • ROLFS • CUMMINGS, INC.**

HOUSTON, TEXAS  
P. O. Box 2073 Underwood 4-6391

FARMINGTON, NEW MEXICO  
P. O. Box 1207 DAVIS 5-5523

IN CANADA  
Canadian Equipment Sales & Service Co., Ltd., 7310 99th St., Edmonton, Alberta, Canada  
For more facts, use Request Card at page 18 and circle No. 207



(Continued from preceding page)



On the deck, a Cmetco power buggy picks up a load of concrete from the Gar-Bro double-gated hopper. A fleet of seven of these motorized buggies kept shuttling between the hopper and the point of placement to keep crews supplied with concrete.

for the first concrete pour.

Since the deck is continuous over several piers, this entire length—ranging from 300 to 400 feet—was formed and poured as a unit.

#### Concrete placement

On some of the pours for the first deck, the concrete was hoisted by two Mixermobiles with high towers. The ready-mix trucks dumped into the skips of the Mixermobiles and the mix was fed through the drum to the tower bucket and carried up to the deck. A 4-yard double-gated hopper

at the deck level served as a surge bin for the buggies.

On large pours, this method was augmented by the truck crane which was used to pour columns. This rig bucketed concrete directly to the first deck forms in 2½-yard buckets. On the later pours on the first deck, as well as all pours for the second deck, the big motor crane was used to raise all of the concrete directly to the hopper.

Bottom slabs and stem walls are poured from hand-powered buggies, as are some of the top slabs. Most of the concrete for the second-deck top slab is being transported from the hopper to the forms by a fleet of seven power buggies.

Several types of vibrators are used on the work, but the contractor is finding it advantageous to rent Home-lite generator and vibrator sets with the owner providing the maintenance. Three of these generators and six vibrators are usually on the job.

#### Lost soffit forms

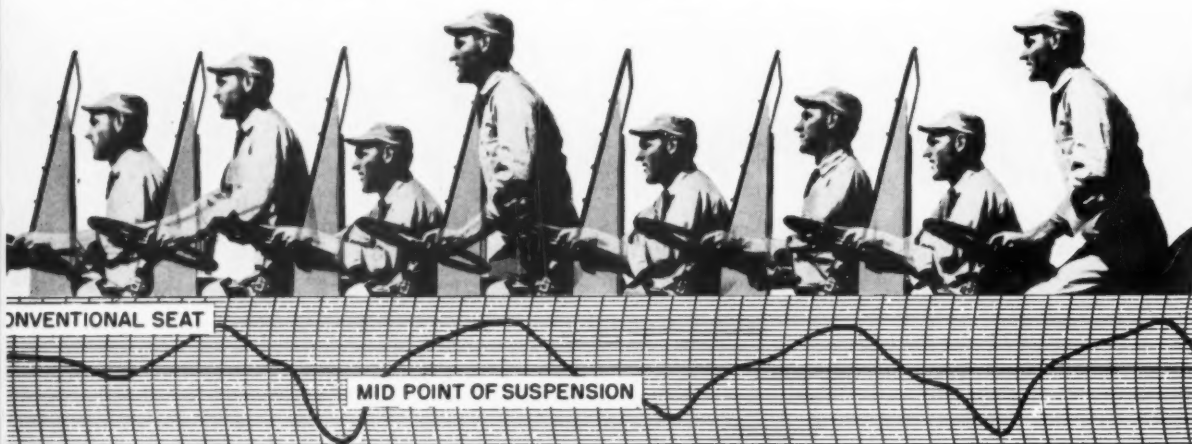
To form for the top slab, it is necessary to place a form in the area between the stem walls. Since there is no access to this area once the top slab is placed and this form cannot be recovered, it is referred to as the lost soffit form.

Harney developed a simple lost soffit form, using the cheapest available 2 × 4's and an inexpensive ¾-inch plywood. The workmen first nail a 2 × 4 ledger to the stem-wall concrete, using a stud gun with 22-caliber loads and ¾-inch studs. Spanning between these ledgers are 2 × 4 joists supported at the center by shoring posts that reach down to the lower slab. The light decking is held down with just enough nails to keep it in place.

Concrete for the top slab, placed with hand or power buggies, was screeded with power screeds and finished by hand.

#### Second-deck shoring

With the first deck completed, the second-deck columns are formed and poured up to the level of the bottom of the caps. Then comes the job of shoring and forming the second deck. Here, railroads and street intersections give no problem, but shoring and forming material have to be moved ahead on the first deck through a sec-



## Operator efficiency increases with ... the new Caterpillar Torsionflex Seat



New Torsionflex Seat for Caterpillar wheel Tractors increases operator efficiency and comfort—provides a "highway" ride in off-highway conditions. Note the difference between the ride in the Torsionflex Seat and the conventional seat, as illustrated by this graph made over the same rough test course.

The Torsionflex Seat is just one of many new features introduced by Caterpillar to help increase earthmoving production!

Over the years Caterpillar has been the leader in improving earthmoving equipment with one aim in mind: to move more dirt faster at lower cost. No advance, from strengthening a 7-pound piston to redesigning a 30-ton rig, has been overlooked to increase the efficiency of Caterpillar-built machines, as well as the efficiency, comfort and safety of the men who operate them!

Now, in the new Torsionflex Seat, Caterpillar introduces a new concept in wheel tractor seat suspension—to give the operator maximum comfort over the roughest terrain. The new seat conserves his energy, lessens his fatigue, enables him to do more work per shift.

#### Test course proves superiority of Torsionflex Seat

The graph here shows the improved ride made possible by the Torsionflex Seat. Two rubber-tired machines, one with this new seat and the other with the conventional seat, were run over the same

rough test course at the same speed. The lines in the graph were plotted by instruments attached to the operator. The horizontal component of the lines represents forward travel by the operator, while the vertical component represents his up and down motion. Note the big difference in the ride!

The new seat is just one of many improvements, large and small, being made constantly by Caterpillar throughout its line—tractors, scrapers, motor graders, other earthmovers. For modern, heavy-duty equipment that will increase your production and lower your costs, see your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

# CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

LEADER IN FEATURES  
THAT INCREASE PRODUCTION  
AND LOWER COSTS



As forms are stripped, materials are piled by type and made ready for transport ahead. This Clark truck is loading a stack of plywood onto a trailer; in the background, a workman is tying up a bundle of 2 × 6 joists.

—For more facts, circle No. 208



tion that is being built or cured.

One alternative would have been to lower the materials to the ground, transport them ahead, and then raise them again at the new location. Harney figured out a faster and cheaper way.

The tubular steel shoring is used to shore the second deck from the finished first deck. In setting the shores, a 10-foot-wide aisle is left open down the center of the structure. Steel beams span across this opening, leaving an aisle through the entire length of the shoring.

As a section at the rear is stripped, the workmen put the several types of materials into separate piles or containers. As the shoring towers are dismantled, each of the components fits into specially designed racks or boxes. Everything is placed on pallets so that it can be handled by a lift truck.

A small fork truck loads piles of the plywood, lumber, timbers, steel beams, and scaffold components onto small rubber-tire trailers. The fork-lift then hooks onto the trailers and pulls them through the open aisle to the advance area for reassembly.

Here, a small truck crane raises the various elements of the shoring and forming into place as they are reassembled. Since this little 10-ton motor crane can get through the 10-foot aisle, it can travel in either direction on the lower deck, if necessary.

The concrete-placing operation for the top deck is similar to that for the lower deck, but all the concrete is being hoisted to the hopper by the 60-ton motor crane in the 2½-yard buckets.

The form system, designed for fast and easy erection, is also easy and fast to strip. Workman first break loose the lower jacking nuts of the shoring towers just to be sure they are not locked. Then they lower the top jacking nuts enough to take out the 6 x 12 stringers under one edge of a form section.

Using a special twisting tool, they next tip the 2 x 6 joists to free them. As these 2 x 6's are pulled out, the plywood decking sections come free. The workmen drop them down onto the first cross brace of the shoring tower where they become a working scaffold for the men doing the stripping.

The plywood is left here long enough for finishers to follow along and do any necessary finishing to the underside of the deck. In most instances, this is simply the removal of a few small fins which form between the sheets of plywood.

When the finishers are through, the plywood is lowered to the deck and stacked so that it is ready to be moved ahead. The towers are dismantled, piece by piece, with each component going into the rack or box in which it is moved ahead.

A total of some 41,000 cubic yards of structural concrete and 13 million pounds of reinforcing steel is going into the structure. The job also includes an extensive lighting system and 18,000 linear feet of guardrail.

Overseeing the job for Charles L.

Harney, Inc., is project manager Jim Ahern. Job superintendent is Robert V. Waylett. Supervising the pile driving for Macco Corp. were Woodrow W. Grimland and Stan Tremble.

Representing the California Division of Highways on the project are resident engineer D. R. "Don" Higgins and assistant resident engineers George Low and Linn Ferguson. Higgins is also serving as area supervisor over three other freeway projects in the vicinity.

The project is being handled by the Bridge Department, Division of Highways, under F. W. Panhorst, bridge engineer. State highway engineer and chief of the Division of Highways is G. T. McCoy.

THE END



Steel H-piles that support the footings of the structure are taken from a stockpile by this Garlinger fork-lift and delivered to the pile drivers. Some of the columns are at left.

## CONTRACTORS CUT COSTS WITH EIMCOS'

Move more earth  
at less cost with Eimco  
heavy-duty equipment



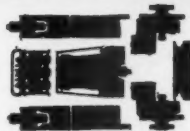
### INDEPENDENT TRACK ASSEMBLY

Each track is powered and controlled separately — Tractor spin turns in its own length, with one track in forward and the other in reverse.



### INSTANT REVERSAL

No stopping, manual clutching or gear shifting to change directions — A pull on the track control levers immediately reverses the tractor.



### UNIT ASSEMBLY

Each major tractor component is a separate assembly for easy maintenance or removal without disturbing other components.



### FULL VISIBILITY

Up-front operators position eliminates all guess work in dozing, digging, pushing and loading operations.

Eimco heavy-duty earth moving machinery will permit lower bids on construction work.

Here are reports from a few jobs where Eimco equipment is being used:

1. Underground limestone quarry working an Eimco 105 on 2 levels to do all underground loading. — "Our maintenance parts and labor for the past 21 months have cost 2½ cents per ton."
2. Road contractors in the deep South — "We now have more than 17,000 hours on our 105 and have not had to open the transmission for any reason."
3. "We averaged better than 45 feet a day on our job mostly because of the 105's." — This letter from a tunnel contractor who is driving a large heading with two 105's working side by side.
4. Quarry contractor — "In a few days we should receive our third Eimco 105. These machines are gradually taking over all production and are replacing the boom shovel."
5. Railroad contractor — "Our 105 has replaced a 1½ yard boom shovel and a bulldozer we had used to move stone up to the shovel."

THE EIMCO CORPORATION • SALT LAKE CITY, UTAH

EXPORT OFFICE, 51-52 SOUTH STREET, NEW YORK, N. Y.

BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD



B-346

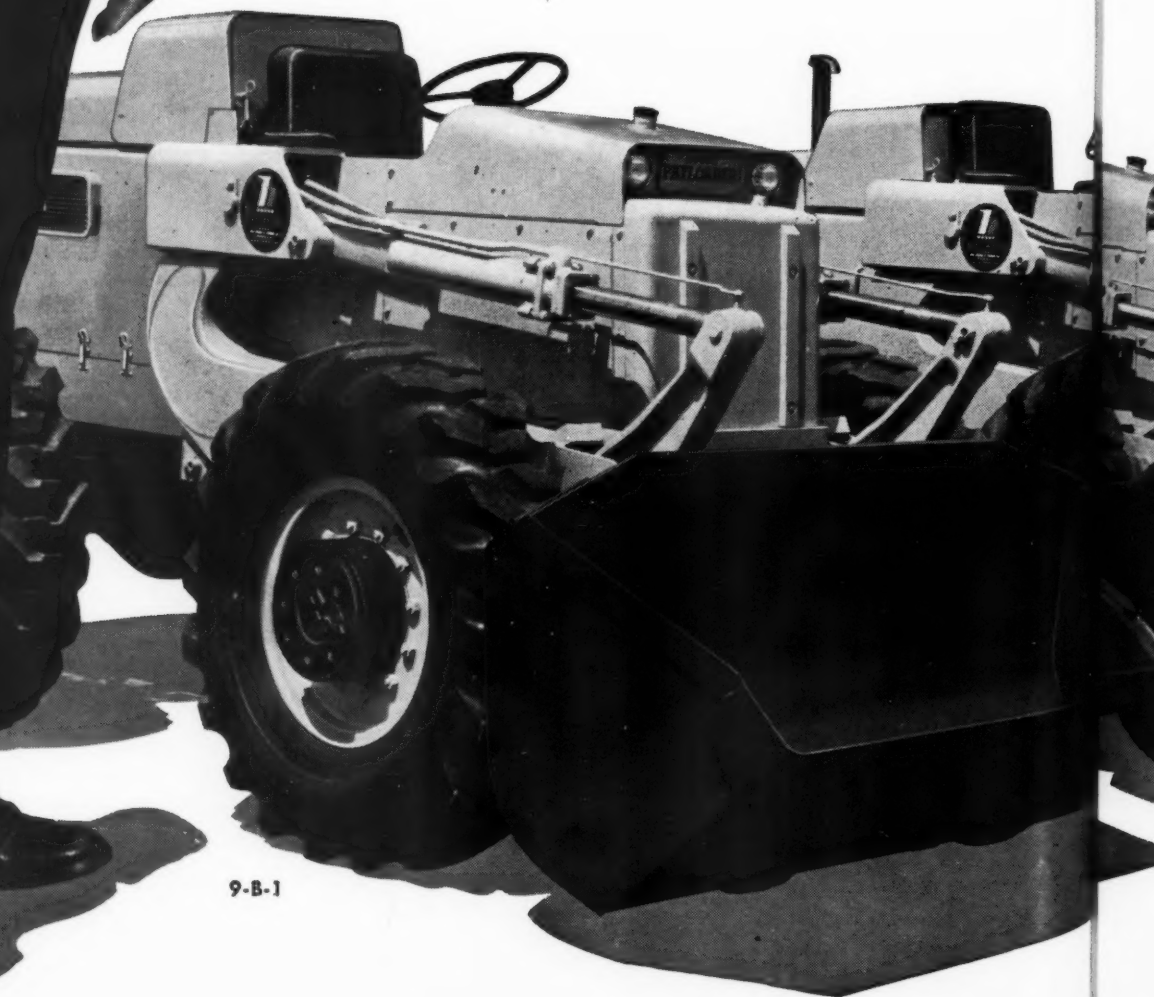
For more facts, use Request Card at page 18 and circle No. 209



*"These machines may  
look alike but there's  
**A BIG DIFFERENCE**  
in their performance"*

"Our new model H-70 'PAYLOADER' may appear similar to its predecessor, the model HH, but that's where the comparison ends," says G. A. Gilbertson, President of The Frank G. Hough Co.

"Our program of continuous research and product betterment has made possible a number of improvements that make the model H-70 far superior in performance. These changes and what they mean in terms of improved tractor-shovel performance and satisfaction are pointed out in the following paragraphs."





### Greater power

New and more powerful engines, both gasoline and diesel, give you reliable power and plenty of reserve power. Diesel engines are available in either 2 or 4 cycle types.

### More traction

New, better weight distribution with 1500 pounds more weight on the rear wheels provides more useable traction at all times—gives more push for greater digging power, better climbing ability and surer footing on mud, snow and ice.

### Stronger throughout

Many components have been made stronger than ever, including main frame, boom arms and bucket linkage. The new front axle assembly is 40% stronger and the rear (steering) axle assembly is 80% stronger. These axles are wider and increase the side stability of the model H-70. They also include larger main shafts and heavy duty planetary final drives in the wheel hubs.

### Greater protection

To assure fullest protection of the engine when operating in dusty conditions, the H-70 uses a triple air cleaner system consisting of a precleaner and two oil-bath air cleaners. A cartridge-type oil filter is built into the hydraulic reservoir. Similar filters also protect the engine oil and the transmission-torque converter oil. The front service brakes are sealed to keep out dust and dirt.

### Larger, more efficient torque-converter

The torque-converter in the model H-70 is larger with ample capacity for the job and closely matched to the engine and transmission characteristics. It is the efficient two-phase type with a high torque-multiplication factor (stall ratio) of 2.72 to 1.

### "Paylomatic" power-shift transmission

The model H-70 has the same Hough-built "Paylomatic" full power-shift transmission that has demon-



strated its superiority on the model HH. With 3 speeds in each direction, it provides low powerful digging speeds plus high forward and reverse travel speeds up to 26 mph. Finger-tip shifting up or down in either direction without "clutching" or stopping for a range shift, speeds operating cycles on any job.

### Power-transfer differentials

The use of power-transfer differentials as standard equipment on both front and rear axle assemblies continues with this model H-70. These special differentials insure reliable traction on mud, ice and similar conditions by transferring more power to the drive wheels with the best footing when slippage is encountered.

### What about rated capacity?

This model H-70 like all other "PAYLOADER" models is rated, not by "Bucket Size" or "Lifting Capacity", but by *Carry Capacity*—the pounds of material that can actually be carried in the bucket at speeds up to 4 miles per hour. The Carry Capacity of this "PAYLOADER" is 7,000 lbs. and you will note that the "70" in the model H-70 designation indicates it's 7,000 lb. Carry Capacity.

Knowing the Carry Capacity is 7,000 lb., you can select the bucket you need from the many sizes available (from 1 cu. yd. to 2¾ cu. yd.) depending on the specific weight of the heaviest material you want to handle.

For example, a 2 cu. yd. bucket for handling materials weighing up to 3,500 lbs. per cu. yd. ( $2 \times 3,500 = 7,000$  lb.). Insist on knowing the Carry Capacity of the tractor-shovel you buy. "Lifting Capacity"—what it will lift standing still—and "Bucket Capacity" are not enough.

### Powerful pry-out bucket action

The model H-70 has the famous pry-out bucket action that distinguishes "PAYLOADER" units from all other tractor-shovels in both looks and performance. Your Hough Distributor would like you to prove to yourself that the model H-70 will out-produce any tractor-shovel near its size. Ask him for a demonstration, and you be the judge. The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Ill.



Modern Materials Handling Equipment

**THE FRANK G. HOUGH CO.**

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



## Names in the news

Francis S. Friel, president of the American Society of Civil Engineers.



### ASCE elects president

Francis S. Friel has been elected president of the American Society of Civil Engineers. A former vice president of the organization, Friel is pres-

ident of Albright & Friel, Inc., Philadelphia, a firm doing design and construction supervision on sanitary engineering and other projects.

Friel heads the U. S. Executive Committee, and is a past president of the American Institute of Consulting Engineers and the Federation of Sewage & Industrial Wastes Association.

### Dravo promotes Thompson

Robert A. Thompson has been named assistant operations manager of the Contracting Division, Dravo Corp., Pittsburgh. Prior to his new position, he served as a field superintendent, and most recently supervised all construction on the Taconite Harbor project for Erie Mining Co.

### Ebasco promotes Hall

Marvin F. Hall has been promoted to consulting gas engineer by Ebasco Services, Inc., New York City, engineering, construction, and business consulting firm. Hall has handled assignments including studies of future supplies of natural gas and crude oil reserves; of gas engineering practice and economic feasibility of natural gas pipelines; and of propane gas storage problems in Canada.

### Corps assigns new chief to South Pacific Division

Brig. Gen. Robert G. MacDonnell has been assigned as division engineer of the South Pacific Division of the U. S. Army Corps of Engineers. Gen.

Brig. Gen. Robert G. MacDonnell, division engineer for the South Pacific Division of the Corps of Engineers.



MacDonnell will direct a \$240 million construction program, which includes flood-control and navigation projects, as well as military construction, in California, Arizona, Nevada, Utah, and portions of bordering states.

Gen. MacDonnell, who succeeds Brig. Gen. William F. Cassidy, was formerly assistant commandant at The Engineer School, Fort Belvoir, Va.

# OLIVER

NEW OC-4 GAS OR DIESEL



Pier Kooistra says,

**"The new Oliver OC-4 costs only \$3 a day to operate\* and cuts working time two-thirds!"**

Handling a variety of work which includes excavating, paving, landscaping, septic tank installation, etc., Pier Kooistra of Preakness-Wayne, New Jersey, has experience with plenty of tractors. Visited on this job where he is stripping topsoil preparatory to



Oliver OC-4—a compact, powerful machine. "Here's the trailer I use to haul the OC-4 from job to job. For a heavier machine it would cost me at least \$1000 more for a used truck or \$3000 for a new truck—plus everything else that costs more," says Mr. Kooistra. Get the facts about the new OC-4 before you buy.

excavating for a basement, he said, "The new OC-4 is just the machine for me. On similar jobs I've hired larger machines with costs of about \$40 a day more than I pay to use my own OC-4."

What's more, he states that the new OC-4 has more traction-maneuvering on soft ground than any other machine he has ever seen or operated.

He concluded, "I'd much rather own five OC-4's than two or three larger machines because I'll make more money with less operating capital." There's a thought worth examining further. Ask your Oliver distributor. He can give you the arithmetic that will save you money.

\*Fuel cost, of course.



**THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 211

### Asphalt Institute names paving, district engineers

Paul S. Wright has been appointed commercial paving engineer for the Pacific Coast Division of The Asphalt Institute. An expert in the fields of soil testing, design and control of asphalt mixtures, and paving, Wright was formerly chief field engineer for the City of Los Angeles and served in its Department of Public Works for 34 years.

At the same time, the institute promoted district engineer Vaughn Marker to division paving engineer. He will continue to work from the division headquarters in San Francisco, but will direct paving advisory work throughout the division's territory—Washington, Oregon, California, and Arizona.

Two district engineers have been named by the institute. Allison D. Hill, a 26-year veteran design, construction, and materials engineer with the Kansas State Highway Commission, fills the Illinois post. Earl G. Angell takes over the post for Minnesota and Iowa.

### ABTTA elects to board

John S. Stillman has been elected a member of the board of directors of the American Bridge, Tunnel and Turnpike Association, Inc. Stillman, chairman of the New York State Bridge Authority, is chairman of the association's committee on bridge administration, and also served on the committee which prepared testimony for a Congressional hearing concerning the impact of the interstate highway program on existing and future toll facilities.

### New Orleans Port names planning coordinator

Col. William H. Lewis (U. S. A., ret.) has been appointed planning coordinator for the Port of New Orleans. In this post, Col. Lewis has charge of all planning and development of facilities, as well as of all activities of the Port Commission involved in the construction and development of the Mississippi River-Gulf outlet.

He is also responsible for the preparation, adoption, and execution of a \$120 million port improvement and

CONTRACTORS AND ENGINEERS



million  
includes  
projects,  
tion, in  
Utah,  
tes.  
succeeds  
dy, was  
lant at  
Belvoir,

es  
ers

pointed  
for the  
Asphalt  
elds of  
of as-  
Wright  
eer for  
rved in  
rks for

te pro-  
'aughn  
gineer.  
m the  
Fran-  
lvisory  
terri-  
alifor-

been  
D. Hill,  
struc-  
th the  
ission,  
Angell  
a and

ected a  
ors of  
and  
lman,  
State  
of the  
e ad-  
n the  
mony  
cern-  
nigh-  
uture

S

ret.)  
ordi-  
s. In  
of all  
cili-  
the  
con-  
Mis-

rep-  
n of  
and

EEERS

FIRST CLASS  
Permit No. 279  
(Sec. 34.9 P.L.&R.)  
New York, N. Y.

**BUSINESS REPLY CARD**

No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY

**Contractors and Engineers**

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

FIRST CLASS  
Permit No. 279  
(Sec. 34.9 P.L.&R.)  
New York, N. Y.

**BUSINESS REPLY CARD**

No Postage Stamp Necessary if Mailed in the United States

POSTAGE WILL BE PAID BY

**Contractors and Engineers**

470 FOURTH AVENUE

NEW YORK 16, NEW YORK

## Contractors and Engineers - Request Card - September '58

Please send me information on Products and/or catalogs described in this card as circled below. *This card must be received before December 1st for processing.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Name \_\_\_\_\_ Title \_\_\_\_\_  
 (Please Print)  
 Company or Gov't Dept. \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

*Listing of your Business Connection is essential for handling literature request.*

## Contractors and Engineers - Request Card - September '58

Please send me information on Products and/or catalogs described in this card as circled below. *This card must be received before December 1st for processing.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Name \_\_\_\_\_ Title \_\_\_\_\_  
 (Please Print)  
 Company or Gov't Dept. \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

*Listing of your Business Connection is essential for handling literature request.*



expansion program, scheduled for completion in 1970.

Col. Lewis was formerly district engineer in New Orleans for the U. S. Army Corps of Engineers, supervising investigations, planning, construction, and maintenance work valued at \$119 million.

### NSPE votes Dunn president and presents award

Dr. Clark A. Dunn has been elected president of the National Society of Professional Engineers, succeeding Garvin H. Dyer. Dr. Dunn is a professor of civil engineering and executive director of the office of engineering research at Oklahoma State University.

Six regional vice presidents were also elected: Harold A. Mosher, Northeastern Region; John B. McGaughey, Southeastern; L. E. Easley, Central; W. L. Hindermann, North Central; L. R. Durkee, Western; and Noah E. Hull, Southwestern. Russell B. Allen was elected for his eleventh term as treasurer.

At the annual meeting also, Nathan W. Dougherty, dean emeritus of the University of Tennessee, received the society's 1958 award. The annual award is made in recognition of leadership in the profession.

### O'Farrill Award given to Thailand engineer

Federal Highway Administrator Bertram D. Tallamy presented the O'Farrill Highway Award to Sirlak Chandransu of Thailand, one of 42 foreign highway engineers from 34 countries who just completed a year of graduate studies in the United States under the auspices of the International Road Federation.

The award is presented each year to an outstanding student taking advanced studies on an IRF fellowship. It is named in honor of Romulo O'Farrill, president of the Mexican Highway Association.

### Highway engineers named

Five engineers have been appointed by the Pennsylvania Department of Highways. Francis H. Gilroy is bridge design engineer 2 in the central office at Harrisburg; Raymond E. Lintner, highway design engineer 1, and Panayotis Vrettacos, civil engineer 1, District 11 office, Pittsburgh; Leonard P. Moore, civil engineer 1, District 2 office, Clearfield; and Thomas W. Lyons, Jr., civil engineer 1, District 12, Uniontown.

### BRI re-elects Topping

The Building Research Institute has re-elected Charles H. Topping and Harold L. Humes president and vice president, respectively. Five new members were appointed to the 28-man board of governors: F. J. Close, Leon Chatelain, George S. Goodyear, Mason G. Lockwood, and James R. Price. Four men were reappointed to serve additional 3-year board terms: C. P. Bobe, John F. Hennessy, Otto Nelson, Jr., and C. H. Topping.

### New York Trap Rock officer becomes board member

John R. Kringel, vice president of production of the New York Trap Rock Corp., West Nyack, N. Y., has been named to the firm's board of directors. Kringel joined Trap Rock in 1954 as superintendent of the Haverstraw plant, became assistant vice president of production two years later, and vice president in April of this year.

### Engineering firm elects

Joseph M. DeSalvo, chief engineer of Joseph S. Ward, Inc., consulting soil and foundation engineers of Caldwell, N. J., has been elected vice president of the company.

### Construction firm wins safety award

Joseph P. Blitz, president of the New York City construction firm of J. P. Blitz, Inc., was presented with the Employers Mutuals of Wausau's top safety award for his firm's safety record as general contractor on the Morningside Gardens housing project in New York. Dale Snure, resident vice president of the organization's New York branch, made the presentation at a luncheon given in honor of the occasion.

### Steinman establishes student-aid scholarships

Dr. David B. Steinman has made a grant of \$10,000 to St. Lawrence

University to establish Holton D. Robinson scholarships for student aid, in memory of his late partner, Dr. Robinson, an alumnus of the university. The grant, made from the funds of the David B. Steinman Foundation, specifies that each student who receives a scholarship should be asked to assume a moral obligation to repay the university when he can, in order to help make the fund self-perpetuating.

C. H. Gronquist, associate engineer at the Steinman firm, has received an honorary degree of Doctor of Science from his alma mater, Rutgers University, New Brunswick, N. J. The degree was conferred in recognition of his work on the design and supervision of construction of many major bridges in the United States.

**CLEMENT HYDRAULIC-LIFT TANDEM TRAILERS**

**LOAD MORE AT THE SHOVEL... HAUL MORE OVER THE HIGHWAY... LEGALLY**

You get a big bonus when you spot a Clement Dump trailer under a shovel. They load extra yards—legally—compared to conventional dump units. Clement's unique caterpillar-dump-action eliminates heavy rigid frames—puts dead weight into bonus payload.

There is an added bonus in every day's operation, for Clements spot easily and have fast hydraulic dumping action to speed-up round trips. Work records prove Clements haul more with less maintenance and operating cost than any other dump equipment.

Designed by Clement, inventor of the original cable-lift dump trailer. Field proved on hardest quarry and construction projects.

Boost your earning power per dump unit . . . contact your nearest Clement distributor or write direct . . . today.

Limited number of Clement distributors open to qualified heavy equipment dealers in Atlantic Seaboard states.

#### DISTRIBUTORS:

ALABAMA H. C. Blackwell, Jr., Adamsville • ARKANSAS Shipley Trailer and Equipment Company, Fort Smith; Southern Equipment Company, Little Rock • CALIFORNIA Strange Truck and Equipment Company, West Sacramento • COLORADO Timphe Bros., Inc., Denver • ILLINOIS Archer Trailer and Truck Sales, Chicago • IOWA Hawkeye Truck Equipment Company, Des Moines • LOUISIANA Transportation Equipment Com-

**CLEMENT-BRASWELL, INC.**  
Shreveport, Louisiana  
PLANT: Minden, Louisiana

pany, Baton Rouge and New Orleans • MINNESOTA Road Machinery and Supplies of Duluth, Duluth; Road Machinery and Supplies of Minneapolis, Minneapolis • MISSISSIPPI Robertson-Heil Company, Jackson and Meridian • MISSOURI Highway Trailer Sales, Kansas City New Mexico Timphe Bros., Inc., Albuquerque • OHIO Vaintine Equipment Corporation, Columbus • OKLAHOMA Herd Equipment Company, Oklahoma City and Tulsa • OREGON Schetky Equipment Corporation, Portland • TENNESSEE United Road Machinery Company, Memphis • TEXAS Beckman Trailer Sales, Inc., Fort Worth; I. F. Nelis Associates, Houston; Western Trailer Company, Lubbock • UTAH Transport Equipment Center, Salt Lake City • WASHINGTON Schetky Equipment Corporation, Seattle • WISCONSIN Wisconsin Highway Trailer Sales, Green Bay.



Hydraulic-Lift 10 - 30 yd. cap.



Bottom Dump 10 - 30 yd. cap.

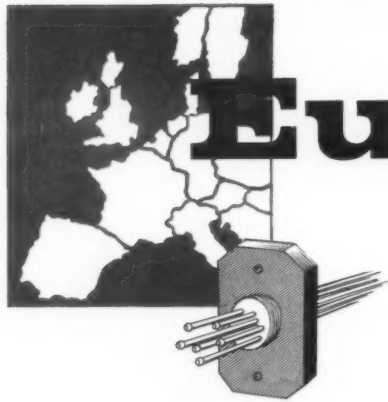


Dual Trailer 8 - 10 yd. cap.



Cable-Lift 10 - 30 yd. cap.

For more facts, use Request Card at page 18 and circle No. 212

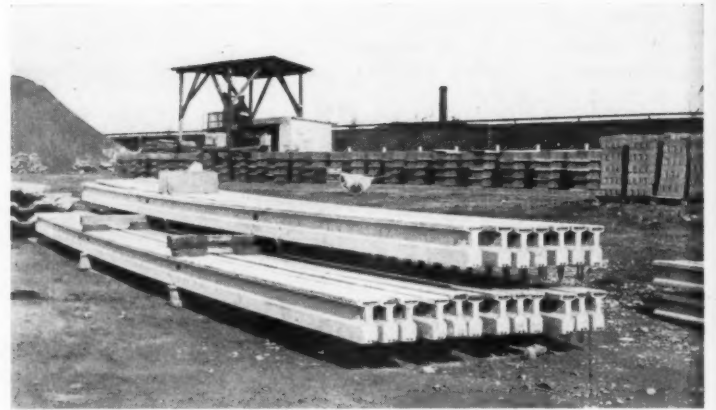


# Europe builds

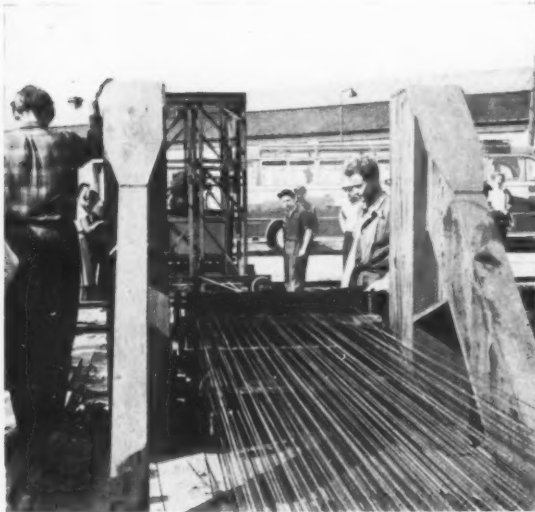
**Precast, prestressed elements push  
poured-in-place construction as economical technique;  
Germany, Sweden, and Denmark demonstrate progress**



At Arsen Schweizer's factory, West Berlin, this outdoor mix plant and block machine produce lightweight concrete blocks for a patented roof deck.



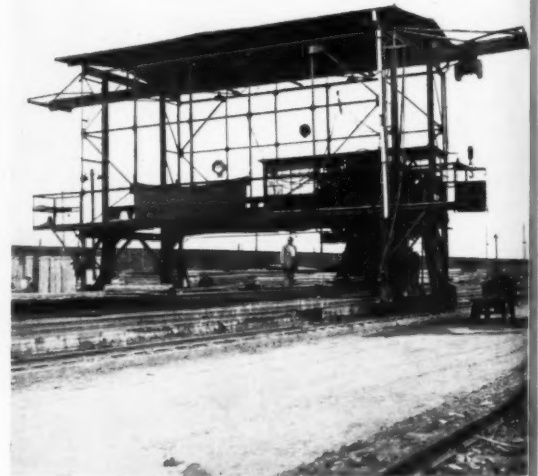
These prestressed beams, stockpiled upside down, are erected about 2 feet apart to support the lightweight blocks comprising the roof deck.



At the Grünau prestressing yard, East Berlin, wires are pretensioned at the live end of this 820-foot bed for the casting of building panels.



After the wires have been firmly secured, a workman snips off the overhang from the reel. Panels are cast sandwich fashion, one over the other.



Small motor buggy delivers bucket of concrete from a central mix plant. The bucket is here being raised by the gantry to the placing machine that casts the panels.



Typical silhouette against a Berlin sky these days is the big revolving crane. This rig is helping to erect a precast concrete building just off the Kurfurstendamm.



One of West Germany's biggest block producers is Trasswerke Meurin at Andernach/Rhine. Blocks flow out from the plant in a steady stream for outdoor stockpiling.



Platform roof of prestressed shell construction at the Koblenz station. Contractor Dyckerhoff & Widmann used the Dywidag prestressing system.

**CONTRACTORS AND ENGINEERS**



# ds with concrete

by WILLIAM H. QUIRK  
editor

With Berlin the setting this year for the Third International Prestressed Concrete Congress (see page 58), considerable interest has been aroused in European techniques and developments in both precast and prestressed concrete.

It is obviously impossible to report

in an article or two on the progress an entire continent is making in this particular phase of construction activity. But after visits to concrete plants and projects in half a dozen or so northern European countries, a pattern emerges indicating that concrete is not only the prime building ma-

terial in use, but also that it is most adaptable to the current economic climate.

In the past, concrete has chiefly been fashioned into functional shapes through on-the-job pours done by contracting organizations. There is still plenty of this type of construc-

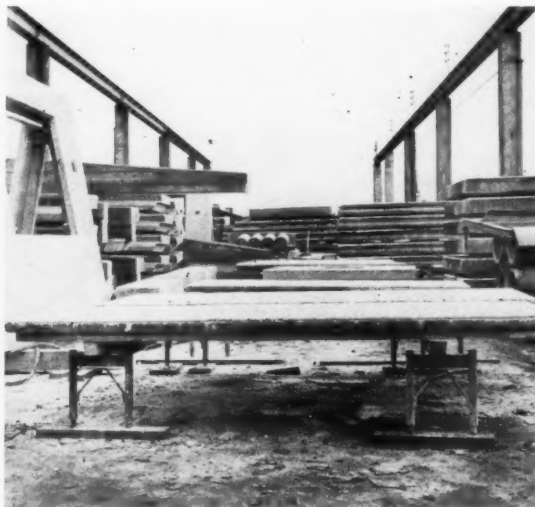
tion going on, and no doubt there always will be. But considerably more concrete each year is being precast in what are generally called factories or plants.

These production centers may be completely enclosed, or they may con-

(Continued on next page)



At the Swedish plant of AB S:t Eriks Fabriker, a Fejmert horizontal, turbine-type mixer discharges concrete to a buggy that feeds an automatic slab paver. Slabs are for walks and driveways.



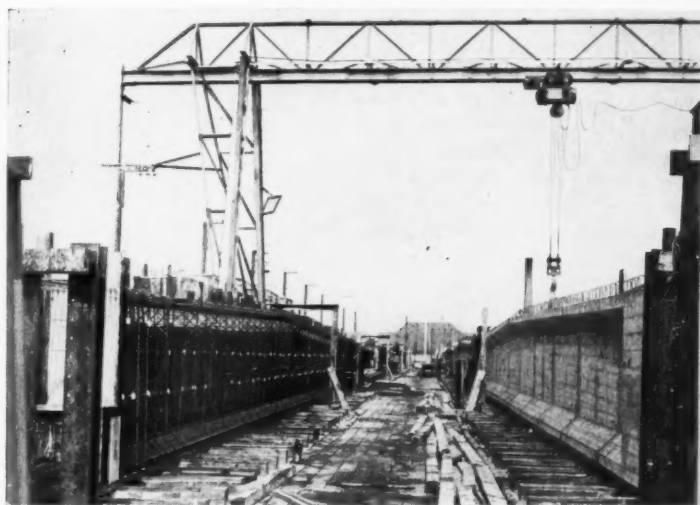
A specialty of Skanska Cementgjuteriet, Swedish producer, is the exterior wall panel with the harsh exposed aggregate for the outer face. The building products firm is 70 years old.



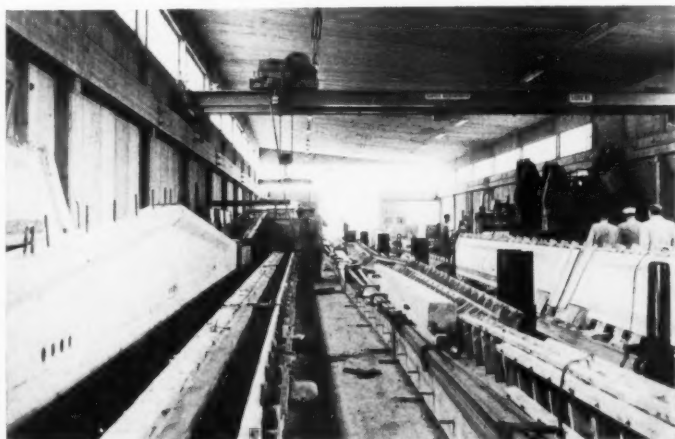
One of the longest set of interior prestressing beds is in the Stockholm factory of AB Strangbetong. These beds are 279 feet long.



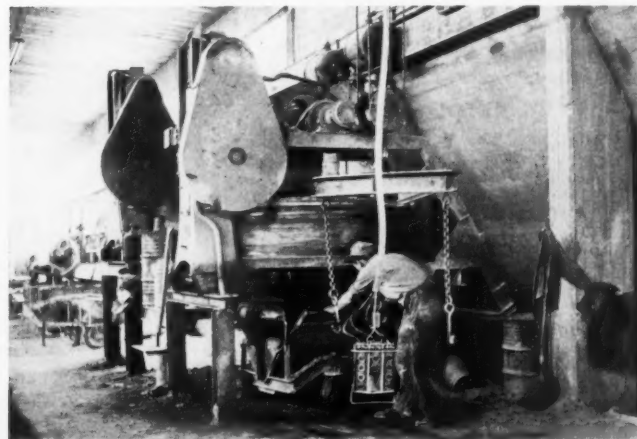
Leca blocks are mass-produced in Copenhagen at the plant of Lemvig-Muller & Munck A/S. The lightweight blocks are cured with low-pressure steam.



Larsen & Nielsen, a contracting firm, operates this outdoor prestressing yard at Glostrup, Denmark. The 80-foot beams are cast for use in an industrial building.



In K. Hindhede's prestressing plant at Roskilde, Denmark, the overhead gantry delivers a bucket of concrete to a beam form. The hall accommodates six beds having a length of 60 meters (197 feet).



Midway along a side wall of the Roskilde plant are twin horizontal-type mixers that discharge concrete into buckets. A hand-operated hoist, mounted on an overhead gantry, takes concrete to the work in progress.



At the Grünau plant in East Berlin, a 2-man crew casts reinforced-concrete railroad sleepers, using a dry mix and a steel form with external vibrator.

sist of a combination of inside and outside work areas. They may be owned and operated by large industrial concerns; by smaller operators such as local contractors-turned-producers; or even by states themselves, as done in the U.S.S.R., East Germany, and Poland. A film that the Soviet Union showed at the Prestressed Congress revealed large-size concrete elements being precast and prestressed in a factory that resembled a modern steel mill, with its gigantic machinery for stressing the wires and handling the finished products.

In this installment on European concrete construction, some highlights of work in Germany, Sweden, and Denmark are presented. Concrete activities in Great Britain, France, The Netherlands, and Poland will be discussed in coming issues.

#### West Berlin

Heavily damaged Berlin, now a divided city, furnishes countless examples of concrete construction, especially in the western sector where rebuilding has progressed at a rapid rate over the past eight years. From the end of the war until 1950, building materials were difficult to obtain. But with the help of the European Recovery Plan, progress has been rapid in reconstruction, especially in the past few years. Economy and the utmost exploitation of building materials have been prime considerations in the work.

In Berlin alone, 32 bridges to replace destroyed spans have been built of prestressed-concrete or composite construction. Grade-separation structures for new express highways are also going up with prestressed elements. Underpinning buildings in connection with the new subway is being done with prestressed beams. And prestressed-concrete sleepers are being laid for the tracks of the new underground railway. Commercial buildings and housing projects are erected with blocks and panels of lighter concrete sections, and with beams and trusses that are prestressed. Tanks, coke ovens, reservoirs, race tracks, gymnasiums, and auditoriums are also examples of prestressed construction. Congress Hall (see page 63) with its doubly curved suspension roof is an illustration of the fact that architectural beauty need not be sacrificed with this type of construction.

Berlin is a ready market, then, for

concrete building materials. Helping to supply that market is the firm of Engel & Leonhardt, in business since 1927, with three plants in West Berlin employing 160 persons to turn out concrete products for both underground and building construction. One of the company's principal products is the 10 x 14 x 10-inch concrete block that sells for 60 pfennigs, or about 15 cents in American currency.

#### Roof deck

Another busy concern producing concrete products in West Berlin is the plant of Arsen Schweizer. Starting out originally as a block manu-

facturer, Schweizer turned to prestressing two years ago with the production of double-tee shapes. His principal line now, however, is a patented concrete roof or deck slab. This system consists of small prestressed beams, placed about 2 feet on centers, and supporting between them lightweight concrete blocks resting on the lower flanges of the beams.

Beams are 9½ inches deep, with a 3½-inch-wide top flange and a 4¼-inch-wide bottom flange. The prestressing is done with deformed bars, rolled as wire, with one or two bars in the top flange and five through the bottom flange. The Krupp rectangular



## REPORT FROM OKLAHOMA:

# CATERPILLAR EQUIPMENT SPEEDS INTERSTATE SYSTEM BYPASS

In clay and rock on the eastern edge of Oklahoma City, Noland Smith Construction Co. is carving out a 1½-mile bypass to U.S. 77, part of the National System of Interstate and Defense Highways.

At work is a 100 per cent Caterpillar team of earthmoving equipment that includes: eight Cat DW15 wheel-type Tractors with No. 428 LOWBOWL Scrapers, two DW21-No. 470 combinations, two D8 and one D7 track-type Tractors, and a No. 12 Motor Grader—14 big yellow machines in all.

The job involves moving some 600,000 cu. yd. of material. Six DW15-No. 428s moved 200,000 cu. yd. on a 2,400-ft. haul. And top daily production has been 7,400 cu. yd. A D8 with No. 8 Ripper breaks up rock where necessary. 400,000 cu. yd. on a 6,500-ft. haul were moved

with eight DW15-No. 428s and two DW21-No. 470s. Top daily production has been 5,600 cu. yd. Average cycle time, 11½ minutes.

As the tempo of work increases on the 41,000-mile system of superfreeways, more and more contractors are standardizing on Caterpillar equipment. A recent survey of the \$415 million Illinois Toll Highway showed that 53 per cent of the equipment at work was Caterpillar.

These contractors have found that for profitable production you can't beat the combination of good machines and good dealer service. You get both from Caterpillar. Ask your Caterpillar Dealer today for an on-your-job demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NEW BYPASS** will provide two 36-ft. main roadways and two 32-ft. service roads to U.S. 77, part of the Interstate Highway System, the greatest construction job in history.





d to pre-  
h the pro-  
apes. His  
, is a pat-  
slab. This  
restressed  
n centers,  
em light-  
ng on the

p, with a  
nd a 4 1/4-  
The pre-  
med bars,  
two bars  
rough the  
ctangular

steel, 0.2 square cm, has a tensile strength of 140,000 pounds per square inch.

Prestressing is done inside the plant on four beds, 75 meters (246 feet) long. The two middle beds hold four beams each, while the outer beds accommodate two beams each. Beams are cast with the bottom flange up so that a wooden sleeper may be attached to the concrete for ease later in placing a wire lath and plaster ceiling.

Wires are pretensioned from one end, and the steel forms are bulkheaded to the beam lengths required. Concrete is supplied from an Eirich

mixer located near the live end of the beds, and is shoveled into the forms by hand. It is vibrated as placed. Forms are removed after 5 or 6 hours, and the exposed wires between lengths are cut after 48 hours. Brick aggregate from Berlin rubble is used in the mix, which has a high cement content. Concrete tests at 8,500 pounds per square inch. During the winter months, a temperature of around 60 degrees F is maintained in the factory, the management feeling that production is higher when the temperature is up. Summer temperatures do not often exceed 75 degrees F in the plant.

Special-shaped blocks for the patented roofing are cast outdoors at a central mixing and block plant, and stockpiled in the yard. The hollowed-out blocks are designed as two slabs, separated by a cavity, with another slab below, also separated by a cavity, on which the ceiling is carried. During erection, the space between block and beam is filled with concrete. In this design, the prestressed beams carry the loads.

#### East Berlin

The largest concrete works in the city, at Grünau, East Berlin, belongs to VEB Betonwerke. Here are manu-



At the Meurin concrete plant in West Germany, a Liebherr crane loads truck with precast conduit for shipping.

**FAST CYCLE TIME** depends on swift, sure loading. Here a Cat D8 Tractor push-loads a DW15-No. 428 Tractor-Scraper combination. LOW-BOWL design assures a full load at every pass.



**BREAKING UP ROCK** is this D8, equipped with No. 8S Bulldozer and No. 8 Ripper. The high-speed haul roads used by the tractor-scrapers are maintained by a Cat No. 12 Motor Grader.



**"CATERPILLAR EQUIPMENT** gives us low-cost operation and low maintenance," says owner Noland Smith. "Add to this easy loading and speed in hauling and you have top production."



factured reinforced-concrete members for the construction of apartment houses (floors, roofing members, door and window lintels, staircases, etc.) as well as sleepers and poles. The plant has an output of 100,000 tons a year, including 20,000 tons of prestressed-concrete products.

Prestressing is done outdoors on a large scale. Building panels and slabs are cast sandwich fashion, one on top of the other, on beds 250 meters (820 feet) long. Wires for the pretensioning are pulled the length of the bed, jacked to the desired tension, secured in place, and snipped off with a wire cutter. Concrete is mixed at a central outdoor plant and discharged into buckets that are carried by gas buggies to the beds. Straddling the beds is a large gantry on rails, which lifts the buckets to an automatic concrete-laying machine that moves transversely across the beds while supported by the gantry. This machine places the concrete without the use of forms and also pushes steel tubes through the mix to form voids in the slabs or panels. Finished products are stored in an adjoining area, which is served by another large gantry on rails. A Panther truck-mounted crane works the yard, supplying materials to the production beds.

Reinforced-concrete sleepers are cast indoors by 2-man crews using a steel form equipped with an external vibrator. An "earth-dry" mix is used that permits a quick set. The form is no sooner filled than it is rolled over on its bowed supports and lifted off the freshly but firmly cast concrete sleeper.

#### West Germany

By a late count, West Germany has 70 plants turning out prestressed products. But the scene of greatest activity in concrete is in the vicinity of Andernach/Rhine, just north of Koblenz, where within a radius of 18 miles some 700 plants, large and small, are producing concrete block and allied products. The reason for the intensive activity in this area is a vast deposit of pumice, lava, and trass that was formed by erupting volcanoes in some remote primeval era.

Biggest producer of all is Trass-  
(Continued on next page)



Stockholm apartment house being constructed with Siporex blocks. Here a mortar truck is emptying into a hopper which in turn discharges into wheelbarrows. A hoist tower lifts the wheelbarrows to the desired floor level.

(Continued from preceding page)

werke Meurin, which has been established at Andernach since 1862. Its present technical director, Ferdinand J. Meuser, a co-owner of the firm, once worked for Bethlehem Steel Co. in America, gaining experience in management and mass-production techniques. His company digs trass from a huge open pit and processes it into hydraulic cement. The firm also quarries volcanic lava slag and manufactures both portland and slag cement. It employs 330 workers.

Concrete products include steam-cured lime-pozzolana bricks, lightweight hollow blocks and bricks of pumice concrete, reinforced roofing

slabs of pumice concrete, and concrete pipe. The Meurin enterprise produces about 1,500 cubic yards of masonry brick in various sizes daily.

#### Sweden

In Sweden, one of the big names in concrete is Siporex, an international product with its headquarters and central laboratory at Soedertaelje, southwest of Stockholm. It is made by grinding sand and water into a slurry; adding cement, aluminum powder, and chemicals, and pouring the mixture into huge molds. The molds are put into an autoclave for steam curing under pressure. There the mix rises like a loaf of bread being baked. Before the big slab hardens it is easily cut into desired shapes of blocks, bricks, or panels. Siporex has many properties of concrete, yet it is light in weight and can be nailed, sawed, drilled, and cut like wood.

Prefabricated Siporex is used in the construction of many apartment houses in Sweden. Load-bearing blocks and slabs are the principal elements. The largest slabs are 19 feet 8 inches long, 4 feet 3 inches high, 10 inches thick, and weigh 2,648 pounds. Erection is done with a minimum of skilled labor.

In Upsala, north of Stockholm, AB S:t Eriks Lervarufabriker has developed an automatic process for making small concrete slabs used in paving walks, patios, driveways, etc. A Fejmert horizontal turbine-type mixer supplies concrete to the automatic slab paver.



In Upsala, Sweden, AB S:t Eriks Fabrik turns out small concrete slabs with this automatic paving machine.

*Yeah, we build 'em bigger and better!*

**McKISSICK**

McKISSICK PRODUCTS CORPORATION

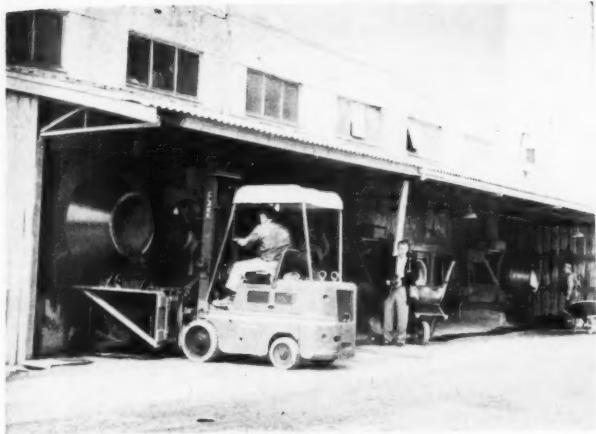
Box 2496 Tulsa, Oklahoma

The largest building contractor in Scandinavia, Skanska Cementgjuteriet of Tureberg, is also a producer of concrete. This 70-year-old firm casts blocks for homes and industrial buildings, wall slabs, floor beams, and pipes. Work is done inside in a roomy factory containing a central mixing plant, with the concrete fed by conveyor belt to the various casting areas. One of the more popular products turned out here is the large exterior wall panel with harsh exposed aggregate.

In Lovholmen, Stockholm, AB Strangbetong has a large prestressing factory on the waterfront, adjacent to a cement plant. Aggregates come in by barge and are moved inside on conveyors that ride a system of pre-

For more facts, use Request Card at page 18 and circle No. 214





A Clark fork-lift gets bucket of concrete from Hilac mixer at the Glostrup, Denmark, plant of Larsen & Nielsen.



Folmer Jorgensen of the K. Hindhede plant at Roskilde poses by a stair flight, one of his company's popular concrete products. Jorgensen is also the president of the National Association of the Danish Concrete Products Industry.

stressed beams and columns. Three horizontal mixers supply concrete to the various beds that are 85 meters (279 feet) long. The company fabricates numerous beams, slabs, and bridge elements which are designed by its own engineers. All work at the plant is pretensioning; any post-tensioning required is handled at the job site. Another popular prestressed product is the railway sleeper. About 100 men are employed at AB Strangbetong.

#### Denmark

In Copenhagen, Denmark, one of the big block producers is the firm of Lemvig-Muller & Munck A/S. The company's block is called Leca (light expanded clay aggregate) and weighs 36 pounds to the cubic foot. The popular size of block — 18 inches x 7 inches x 4 1/2 inches — is light enough to be picked up easily with one hand. Yet it will take the place of five bricks, and is load-bearing. Blocks are produced in mass quantity on an automatic block machine.

Various sizes of reinforced-concrete wall panels are also produced. These panels or slabs are cast like a sandwich, with lightweight concrete in the middle to keep the weight down, and a layer of sand-cement mix on top and bottom for strength. The standard wall panels are approximately 6 1/2 feet long x 1 1/2 feet wide x 6 inches thick. All operations at the Leca plant are indoors.

Larsen & Nielsen, a prominent Danish contracting firm, started a pre-cast-concrete plant in 1951 and has been expanding this "side line" ever since. L&N is still very active in construction both locally and abroad, and

(Continued on page 27)

A Towmotor fork-lift places wall panel on a delivery truck at the K. Hindhede plant in Denmark.



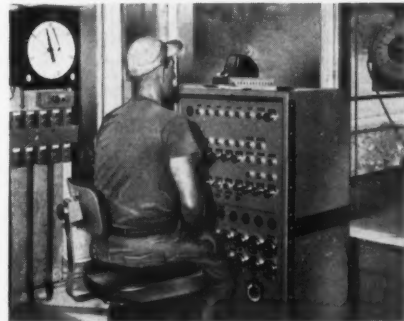
For more facts, circle No. 215—

## SIMPLICITY S-200 STRUTS HER STUFF

Not Because She Puts Out  
100 or 200 T. P. H.  
But Because She Is STEADY

NITTANY MATERIALS INC.									
— WEIGHT AND DELIVERY REPORT —									
Accounting of all tickets required									
Job No.	Job No.	Job No.	Job No.	Job No.	Job No.	Job No.	Job No.	Job No.	Job No.
7-1-58	7-1-58	7-1-58	7-1-58	7-1-58	7-1-58	7-1-58	7-1-58	7-1-58	7-1-58
Ticket	Load Weight	Material	Load No.	Customer	Totals	Truck No.	Time	Rate	Rate
7393	10.5	20-ESR RUBBER	1	HR INGT INC.	10.5	M-55	5:32	6:00	6:00
94	10.5	"	2	"	21.0	M-33	6:00	6:00	6:00
95	9.0	"	3	"	30.0	M-40	6:00	6:00	6:00
96	16.0	"	4	"	46.0	M-89	6:00	6:00	6:00
97	16.0	"	5	"	62.0	M-48	6:00	6:00	6:00
98	11.5	"	6	"	73.5	M-34	6:00	6:00	6:00
99	10.5	"	7	"	84.0	M-31	6:00	6:00	6:00
47600	10.5	"	8	"	94.5	M-43	6:00	6:00	6:00
01	8.0	"	9	"	102.5	M-36	6:00	6:00	6:00
02	11.5	"	10	"	114.0	M-88	6:00	6:00	6:00
03	16.0	"	11	"	130.0	M-87	6:00	6:00	6:00
04	16.0	"	12	"	146.0	M-92	6:00	6:00	6:00
05	11.5	"	13	"	157.5	M-101	6:00	6:00	6:00
06	16.0	"	14	"	173.5	M-91	6:00	6:00	6:00
07	10.5	"	15	"	184.0	M-35	6:00	6:00	6:00
08	11.5	"	16	"	193.5	M-46	6:00	6:00	6:00
09	10.5	"	17	"	206.0	M-70	6:00	6:00	6:00
10	10.5	"	18	"	216.5	M-37	6:00	6:00	6:00
11	10.5	"	19	"	227.0	M-30	7:00	7:00	7:00
12	15.0	"	20	"	242.0	M-78	7:00	7:00	7:00
13	15.0	"	21	"	257.0	M-100	7:00	7:00	7:00
14	10.5	"	22	"	267.5	M-49	7:00	7:00	7:00
15	11.5	"	23	"	279.0	M-57	7:00	7:00	7:00
16	10.5	"	24	"	289.5	M-23	7:00	7:00	7:00
17	16.0	"	25	"	305.5	M-22	7:00	7:00	7:00
18	16.0	"	26	"	321.5	M-20	7:00	7:00	7:00
19	16.0	"	27	"	337.5	M-21	7:00	7:00	7:00
20	16.0	"	28	"	353.5	M-9	7:00	7:00	7:00
21	16.0	"	29	"	369.5	M-38	7:00	7:00	7:00
22	11.5	"	30	"	381.0	M-52	7:00	7:00	7:00
23	9.0	"	31	"	390.0	M-10	7:00	7:00	7:00
24	16.0	"	32	"	406.0	M-38	9:00	9:00	9:00
34	11.5	"	62	"	192.5	M-9	9:00	9:00	9:00
35	16.0	"	63	"	208.5	M-52	9:00	9:00	9:00
36	9.0	"	64	"	217.5	M-22	12:00	12:00	12:00
85	16.0	"	94	"	1196.0	M-20	12:00	12:00	12:00
86	16.0	"	95	"	1218.0	M-21	12:00	12:00	12:00
87	16.0	"	96	"	1260.0	M-87	2:00	2:00	2:00
88	16.0	"	127	"	1600.5	M-23	2:00	2:00	2:00
20	16.0	"	128	"	1616.5	M-22	2:00	2:00	2:00
49	16.0	"	157	"	1632.5	M-22	4:00	4:00	4:00
50	16.0	"	158	"	1800.5	M-22	4:00	4:00	4:00
51	9.0	"	159	"	2002.5	M-55	4:00	4:00	4:00
52	16.0	"	160	"	2011.5	M-87	4:00	4:00	4:00
53	10.5	"	161	"	2027.5	M-33	4:00	4:00	4:00

Production records at left were sent us unsolicited by Nittany Materials, Inc. and covered this Simplicity Electric-powered S-200 plant operating at Stroudsburg, Pennsylvania.



Entire plant operation under control of one man as shown in this air conditioned room.

Day In—Day Out  
Hour After Hour

ALWAYS DEPENDABLE

Note starting and stopping time, first hour's production — which had to be kept steady to give this 2038 tons for the day.

On request we'll be glad to send you reproductions of all 5 sheets so you can figure what steady production like this could do for your profits.

For many years Simplicity has contended that big asphalt plant capacity is no great accomplishment.

The things that are important are: 1. Dependability. 2. Durability. 3. Economy in Operation.

**DEPENDABLE**  
THE SIMPLICITY SYSTEM  
FROM BUILDER TO BUYER  
BETWEEN MEN WHO KNOW  
THE SIMPLICITY SYSTEM CO.  
SHOLAR AVENUE  
CHATTANOOGA 6, TENNESSEE  
PHONE MADison 2-2144



*Stretch Dollars — Save Manpower with equipment that does more ...*

## **WORK BULL 202**

**DOES MORE JOBS THAN ANY  
OTHER RIG IN THE UTILITY CLASS!**

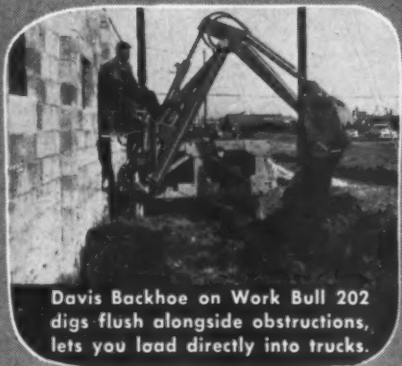
The Work Bull 202 with its complete line of power-matched attachments is designed and engineered to increase your production and save you money on all types of construction jobs! It enables you to handle stockpiling, loading, materials handling, digging, trenching, clean-up, backfilling, scraping, scarifying, leveling, hauling, cable-laying, mowing — even wood cutting — in the fastest time ... and all with one power unit! Most attachment changeovers are so simple you can make them quickly in the field.

New Work Bull Industrial Styling features a low silhouette for better over-the-hood visibility. Distinctive bumper-grille is specially designed to facilitate the mounting of a Davis Loader-Backhoe, so the entire rig will operate as a single integrated unit. Built-in hydraulic pump mounting lets you reach farther by eliminating the necessity for a bumper. Heavy-duty front axle and engine support withstand torsional stresses that accompany heavy industrial use.

High-torque, 40-horsepower engine delivers more sure-footed lugging power at low speeds than any other tractor in the utility class! Dual range transmission has in-line shifting through six forward and two reverse speeds. Other Work Bull quality features include full-time power steering, left and right turning brakes, all-weather starting, quick warm-up, pressure-lubricated engine, safety-starter, pressurized cooling system, and extra-large fuel tank for once-a-day filling.

Other Power-Matched Massey-Ferguson Rigs are the Work Bull 1001 Multi-Purpose Tractor Loader (60.3 h. p.), Work Bull 303 Tractor (54.5 h. p.), Work Bull Fork Lift, and Davis Loader and Backhoe ... plus a multitude of integrated attachments for each basic unit.

For information on the complete Massey-Ferguson Industrial Line ask for Brochure G-4. For specific information on the Work Bull 202 ask for Brochure W-2. Write Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.



Davis Backhoe on Work Bull 202 digs flush alongside obstructions, lets you load directly into trucks.



Work Bull 202 is the only industrial tractor with Ferguson 3-point hook-up for rear end attachments.



Work Bull 1001 Multi-Purpose Tractor Loader is convertible into eight machines. Instant reverse.



**MASSEY-FERGUSON  
INDUSTRIAL DIVISION**



(Continued from page 25)

competes with Belgian, Dutch, and French contractors for European work. It also cooperates in joint ventures and is presently engaged on one such job in India.

Its concrete-products plant is located at Glostrup, where precast elements for buildings are manufactured. Four production lines, each 250 feet long, are set up in one main 40,000-square-foot hall, where all the elements for a prefabricated apartment house—slabs, lintels, etc.—are turned out on an assembly-line basis.

Prestressed pretensioned beams and girders for heavier industrial buildings and bridges are cast outdoors. Any post-tensioning is done at the job site. Concrete is supplied from a central mixing plant containing three Hilar rotary mixers and a pair of horizontal mixers. They are set up at ground level and sheltered by a lean-to structure. Fork-lift trucks carry buckets of concrete from plant to forms. Current work includes the casting of 80-foot-long 20-ton prestressed beams for an industrial building at Kastrup. The wires are stressed, one at a time, with jacking equipment operated by compressed air.

K. Hindhede is a Copenhagen civil engineer who does contracting but whose biggest activity now is supplying concrete, both ready-mix and precast. The firm has five ready-mix and four precast plants in Denmark. Largest of the latter is the Betonvarefabriken Sjaelland A/S at Roskilde. A popular product turned out here is a concrete staircase that is shipped to points all over Scandinavia and also to England. Pipe, slabs, panels, and beams are also manufactured in large quantities.

Prestressing is done in a spacious hall on six beds, 60 meters (197 feet) long. Along one side of the factory, at the mid-point, is a central plant of twin horizontal-type mixers that discharge concrete into buckets. An overhead gantry picks up the buckets and moves them to the forms. Elements are stockpiled outdoors. Fork-lift trucks load members onto trucks for delivery.

(To be continued next month)

### Hobart Trade School moves headquarters

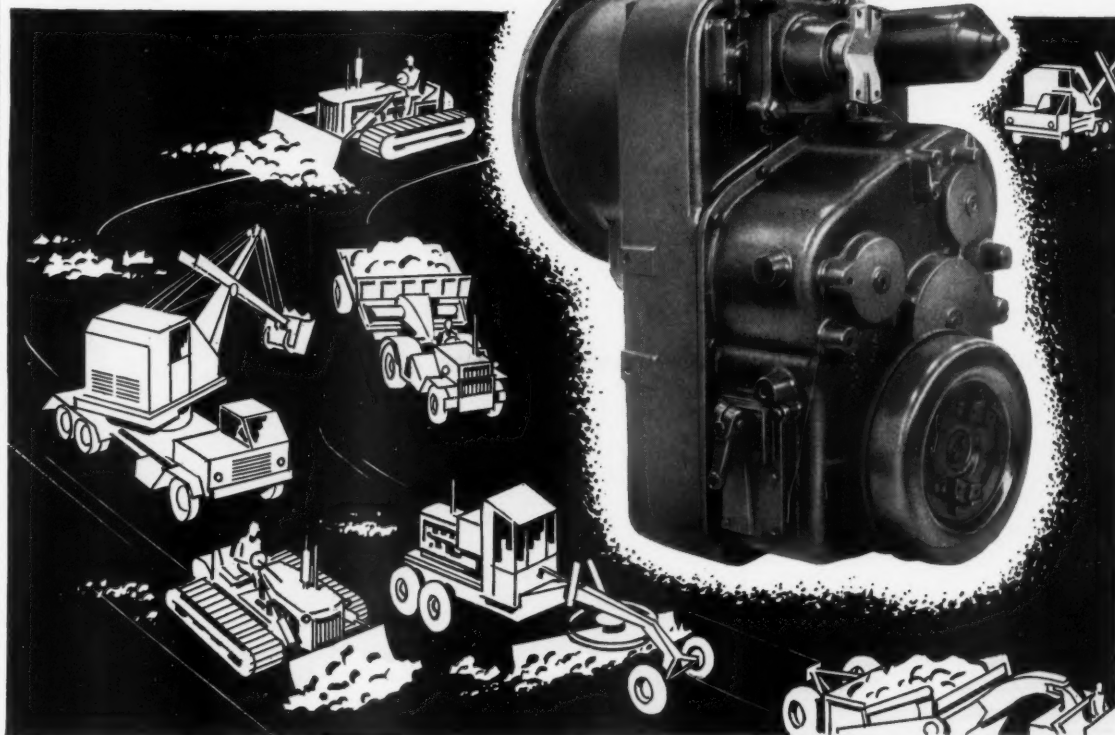
The Hobart Trade School has moved into new quarters in Westbrook, Ohio. This is the first step in the evolution of the new Hobart Brothers Technical School, a non-profit school devoted to teaching, research, and development in the welding field. Covering 80,000 square feet of floor space, the new building houses 120 welding stations for training students in the use of all types of arc and gas-welding equipment.

At present, only welding-operator training courses will be offered. The school is in session 52 weeks a year. Complete arc and gas-welding courses require 16 weeks, but it is possible to tailor a program of any length to meet specific individual requirements.

**PRESTRESSED-CONCRETE COLUMNS** and wall slabs for the new Sutter Junior High School in Sacramento, Calif., are manufactured at the site by Continental Construction Co. of that city. Calaveras Cement Co., San Francisco, Calif., is supplying the cement for the \$1,577,000 project.



### Another new product from Rockwell-Standard:



## HYDRA-DRIVES® POWER SHIFT TRANSMISSIONS

*A torque converter...and 4 speed transmission in one compact package!*

Hydra-Drives Power Shift Transmissions put more power to work...smoothly...efficiently...economically. Proved in hundreds of vehicles for three years, these units assure top work output of heavy-duty equipment. Engine lugging and heavy shock loads are eliminated. A 3 to 1 torque multiplication makes starting fast and effortless—even with heaviest loads.

Simple to operate, too, a flip of the operator's lever accomplishes power shifts within each range and without any interruption of the power flow. Automatic features of the converter and ease of power shifting simplifies operator training and lengthens vehicle life.

With four speeds forward and reverse, the Hydra-Drives Power Shift Transmission is ideally suited for vehicles which must travel in both directions during a normal work cycle. Rated at 550 ft. lbs. input torque, they can be used with a wide range of internal combustion engines up to 250 H. P.

The Transmission and Axle Division of Rockwell-Standard specializes in drive components only, and does not compete with manufacturers of end products. Take advantage of 50 years' experience in the manufacturing of power transmission components, specify Rockwell-Standard.



© 1958, R-S Corp.

**Products of ROCKWELL-STANDARD Corporation**

For more facts, use Request Card at page 18 and circle No. 217

## **Highway program beginning to show first results**

The highway program, according to officials here, is fairly well over the rough "getting started" bumps and is now beginning to shift into second gear. Results are starting to show in more spots around the country as paperwork planning is translated into actual construction.

It will be a long time before the projected networks fall into an integrated whole, but the progress is considered generally heartening. No one denies there have been problems, often vexatious ones, and that the headaches will never completely go away. But that is inevitable in a program of this magnitude.

A few signs of the advances made are these: in the first two years of the program's life, construction contracts were completed on 1,771 miles of the Interstate System, and some 42,500 miles of construction finished on the ABC system. In addition, the stimulus of the special \$400 million in anti-recession funds voted by Congress this year has already been felt. Some 358 miles of road construction were quickly started as a result.

All told, more federal funds were committed to the highway program during the first two years than roadmen anticipated. This is a good index that the program is on schedule.

## **Highway building costs remain on even keel**

Highway building costs seem to be settling down. The index of average bid prices on construction during the second quarter of the year rose only 8 per cent over the preceding three months. The first quarter of 1958 was 2 per cent under the last quarter of 1957. There have been no violent upswings or downswings lately.

The slight boost in the second quarter index is due to a 3.9 per cent increase in excavation prices. Counterbalancing this jump, for the most part, was a 4.6 per cent decline in structural steel prices, which are down 13 per cent from a year ago. Little change took place in the index components of surfacing, reinforcing steel, and structural concrete.

Helping to keep road prices down in some areas, officials note, is keen bidding for contracts.

## **Big increase of road funds based on states' needs**

Giving the highway program an additional shot in the arm is the new whopping apportionment of \$3.4 billion in federal-aid funds for fiscal 1960, beginning next July. The allocations, based for the first time on a formula of states' needs, were announced long in advance so that states will have sufficient time to plan and permit the program to advance smoothly.

The new apportionment, the biggest

yet made, includes \$2.5 billion for the Interstate System, \$300 million more than in fiscal 1959. The 1956 Highway Act had authorized a top outlay of \$2.2 billion for 1960. But that provision was superseded by this year's new legislation that not only upped the amount, but made sure it would be fully apportioned by suspending the pay-as-you-go restriction.

Under the fiscal 1960 distribution, ABC highways will get \$900 million, which is \$25 million more than in 1959. Of this total, \$405 million goes to the federal-aid primary system, \$270 million to the secondary system of farm-to-market and feeder roads, and \$225 million to urban sections of both systems.

California is the largest beneficiary,

getting \$302 million of the 1960 apportionment. Ohio and New York follow with \$198 and \$180 million, respectively.

The smallest sum, \$12 million, goes to Delaware. This may seem small, but it is quite a package by the standards of only a few years ago. Another state, California will get more in 1960 for roads than the whole country re-



**Contractors report**

# **NEW TD-20's are i**

## *with new power...*



**◀ In Washington, D. C.,** a pair of International Drott TD-20 Skid-Shovels operate double-shift—on the Shannon Construction Company ½-million cu. yd. excavating sub-contract for the new House of Representatives office building. Much of the time, the TD-20's are digging and loading gummy clay. "In my opinion," states Contractor W. D. Shannon, "the TD-20 Skid-Shovel is the only loader with the clearance, pry-out action, and fast operating travel and lift to do this job successfully. The TD-20 'Shuttle-Bar' has speeded up the operation, and so has its ease of handling."



ceived in any single pre-World War II year.

An apportionment of \$33 million for improving national forest roads during fiscal 1960 was also made. The heaviest share of these allocations—they do not have to be matched by the states—goes to California and Oregon. Idaho, Montana, Colorado, Washington, and Alaska also get big shares.

#### Effect of higher steel price on bridges held negligible

The increase in basic steel prices injects a note of uncertainty into the cost picture. However, observers here generally doubt that the rise will have too much effect on the price of structures, an especially important element on the Interstate System, where about one bridge per mile is the estimate. At

most, it is expected that the price of highway structural steel will level off or increase slightly.

Actually, the highway construction industry has a good hedge against runaway steel prices in the use of prestressed concrete to build bridges. When steel prices get out of line, states can always turn to concrete, as some have done in the past. It is esti-

mated that steel fabricators already have lost 5 per cent of their market in highway steel to prestressed concrete.

Except for spots here and there, these are not current problems. Highway steel is available in sufficient quantity, the Bureau of Public Roads states, and orders by contractors generally are being filled within 60 to 120 days. A year or so ago, it sometimes took 18 months for delivery from mill to fabricator to user. At that time, many builders were throwing up their hands in exasperation and turning to prestressed concrete as an alternative, wherever possible.

#### Time extended for states to buy right-of-ways

Congress pushed through to easy enactment a bill permitting states to buy right-of-ways for federal highways up to seven years in advance of the start in construction. The time limit was previously five years. The time for beginning work after purchase was extended so that the states would have more time to plan construction. It was felt that five years unduly hampered the highway departments.

The extension also means that the states can take more advantage of favorable costs, and buy before land becomes sky-high. A longer lead time will help here.

A state need not build along the entire right-of-way within seven years. An awarded construction contract for a "reasonable" portion of the actual work within that time would be enough to indicate the state's good faith and intention to carry through.

Congress also passed, without any stir, legislation to revive and codify the jumble of federal-aid highway laws into a single package. Now everyone will have a handy, up-to-date reference on what's what, instead of about 40 separate laws with conflicting and obsolete provisions.

#### Motor vehicle registrations continue to spiral upward

Motor vehicle registrations are still rising to new heights. The 1957 total comes to 67,135,546, a gain of 1,981,736 over the 1956 figure. In percentages, the gain is 3 per cent.

Of the total, 55,906,195 registrations were for passenger cars; 268,537 for buses; and 10,960,814 for trucks.

The range among the states ran from losses of 2.1 per cent in the District of Columbia and 0.6 per cent in New York State to gains of 8.5 per cent in Arizona and 10.7 per cent in Florida. These figures come from a survey conducted by the Bureau of Public Roads.

THE END

In the first 7 months of 1958, toll revenue on the New York State Thruway came to \$16,112,324.55.

—For more facts, circle No. 218

## are increasing production up to 50% er... new speeds... "Shuttle-Bar" control!

It's the combination of 134 hp, six forward and reverse speeds with "single-stick" shift, and rapid "Shuttle-Bar" direction-changing—that account for amazing work capacity in the new TD-20! You've got an instantly available forward and reverse speed range for every load, condition, and operating situation.

On dozing, push-loading, powering front-end loader—wherever owners take advantage of the new TD-20's greater hp and the new speed of applying it—they're setting new performance records for crawlers of this size range!

In certain instances, the new TD-20 is increasing material-moving production as much as 50%—compared to competitive crawlers!

See how TD-20 shifting and "Shuttle-Bar" direction-changing with just a sweep of the hand speed dozing and loading cycles. Measure how new TD-20 handling ease and response can boost your daily yardage and operator efficiency. See your International Construction Equipment Distributor for a demonstration!

This new International TD-20 powering the Bullgrader blade full of "dead" sandy soil clears land, roughs out right-of-way, and acts as pusher for a fleet of rubber-tired haulers. It's working on the F. C. Herling road-building job, near Franklin, Texas. "We like the TD-20 very much because it is fast, and will put 18 yards of dry, sandy dirt on a scraper in only 40 seconds," states Job Superintendent Bricker!

"The TD-20 can doze up to 50% more material per load than the comparable-sized crawler it replaces—and it's faster both in forward and reverse!" states Walter Folger, president, C&F General Contracting Co., Inc., Shamokin, Pa. "The TD-20 has been the most effective tractor we have used!" And the TD-20's operator adds: "The forward-reverse 'Shuttle-Bar' boosts our yardage, and doesn't work me so hard!"

Modernizing a 10½-mile stretch of Louisiana 313, Contractor M. T. Bradley, Kentwood, Louisiana, makes use of new TD-20 speed and capacity—to clear right-of-way; doze heaping blades of water-logged soil to hurry drying; and as a pusher. "The TD-20 will load a 15-yd. rubber-tired hauler, in 75 ft. and in 25 seconds (average)," reports Mr. Bradley.

a pair of Shovels op Cannon cu. yd. new House g. Much of g and load ion," states TD-20 Skid the clear-operating successfully. ded up the handling.

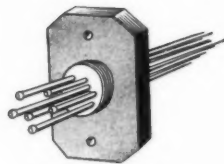


**International  
Construction  
Equipment**

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

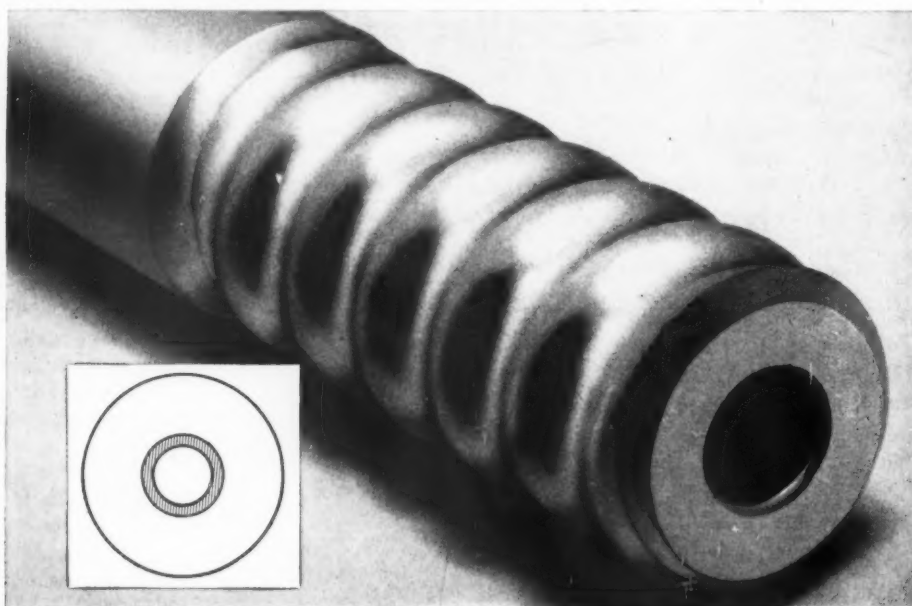
# Tides play role in erection of span's prestressed girders



(Additional photo on front cover)

With the tide at its height, a 75-ton American Revolver, opposite, starts lifting one of the 80-foot-long prestressed girders from barge to bridge. Girders are manufactured in Gerwick's prestressing yard a few miles up Petaluma Creek from the bridge. At center, the American Revolver begins to swing the big girder into place. At extreme right, girder nears final position. ►

## NEW ROPE THREAD MAKES UNCOUPLING EASY WITH SANDVIK COROMANT EXTENSION STEELS



### Rope-Type Threads Afford No Starting Points for Fractures

Connections used in extension drill-steel must be easy to assemble and uncouple, and connections must not become weak links during the actual drilling. Sandvik Coromant's new patented rope thread makes it easy to join and uncouple the equipment . . . yet gives a solid and positive connection. The gently rounded form of this thread means trouble-free performance—eliminates common thread and coupling failures found in "saw-tooth" threads. The complete equipment—bit, rod, coupling sleeve and shank adapter—are all dependable Sandvik Coromant parts made of world-renowned Sandvik alloy steel. A further advantage to the user is that the steel can be re-threaded. Atlas Copco has special literature on Sandvik Coromant extension steel and long-hole drilling, available to you with no obligation. We suggest you write today!



610 Industrial Ave.  
Paramus, New Jersey

930 Brittan Ave.  
San Carlos, Calif.

Distributors of COMPRESSORS, ROCK DRILLS, PNEUMATIC EQUIPMENT,  
SANDVIK COROMANT DRILL STEEL and CARBIDE BITS

For more facts, use Request Card at page 18 and circle No. 219

Making use of the lowest possible tides to place concrete in the footings and the highest tides for erecting the highest girders, the contractor on the construction of the Petaluma Creek Bridge on California Highway 37 near Novato, Calif., took every possible advantage of nature's forces.

Probably the greatest advantage to the joint-venture contractors, Ben C. Gerwick, Inc., and J. H. Pomeroy & Co., Inc., San Francisco, was the fact that the bridge site is just a few miles down the tidal Petaluma Creek from Gerwick's prestressing plant at Petaluma. Most of the prestressed piles and girders for the structure were loaded onto barges at the casting plant and towed downstream to the bridge site where they were driven or set by floating equipment.

Replacing a narrow old timber trestle and bascule-lift bridge, the new high-level structure provides a four-lane divided roadway over the creek and adjacent lowland. The new structure clears the 160-foot-wide navigable channel of the creek by a minimum of 70 feet.

Solid footing on the west approach to the structure permits a 60-foot-high approach fill. On the east, however, the natural ground is an unstable mud flat which cannot support a fill of more than a few feet. The bridge structure was therefore extended in this direction until the 3 per cent grade of the roadway reached the natural ground level.

#### Girders span 80 feet

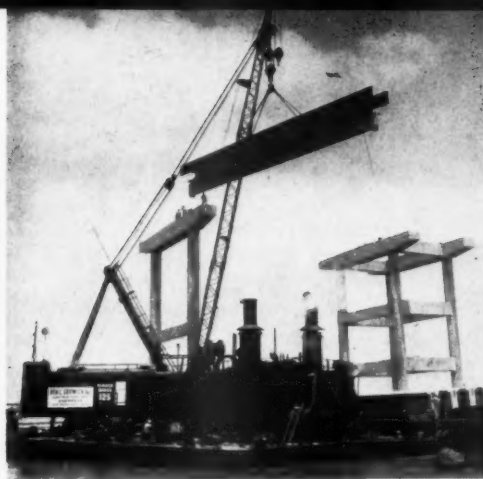
Designed by the Bridge Department of the California Division of Highways, the bridge uses a standard prestressed tee-girder section for most of its deck. The 2,200-foot-long structure is made up of 29 spans. Of these, 24 are of precast prestressed-concrete girders 4.5 feet deep and 80 feet long, four are of precast-concrete girders 25 feet long for the tower bents, and one is of 160-foot-long steel-plate girders over the ship channel.

Typical piers consist of two 4-foot-diameter columns resting on a 5 x 6-foot reinforced-concrete pile cap with 2 x 4-foot concrete struts at mid-height and a 5 x 5-foot concrete cap to provide bearing for the girders. Four of the piers at the west end rest on spread footings on the rock, while the others are supported on long piles.

Four tower bents improve the struc-

CONTRACTORS AND ENGINEERS





ture's resistance to earthquake stresses. These bents are actually two piers spaced 25 feet apart on a monolithic footing and tied together with heavy struts. Three or four of the girder spans to each side of the tower bents are tied together and to the tower bent to provide the longitudinal stability.

#### Building substructures

Excavating and constructing footings for the westerly four bents was a relatively routine matter of excavating into the bedrock and placing the concrete. Easterly from this point, the bedrock drops off very rapidly, and long piles were required. The contractor selected an optional pile consisting of a combination of a 26-inch-square prestressed-concrete pile and a 14-inch steel H-pile.

The 70-foot-long prestressed piles were cast at the Gerwick plant with a 6-foot length of the steel H-pile embedded in the tip. The 26-inch-square concrete piles have a 12-inch hollow center core formed by a Sonovoid and are reinforced with 34 prestressing strands carrying a working load of 394,000 pounds.

Where the piles were to be driven by land-based equipment, they were trucked from the plant to the bridge site and picked right off the trucks by the driving equipment. All of the concrete piles were driven by a skid rig with a 100-foot wooden tower using a differential steam hammer with a rating of 36,000 foot-pounds per blow.

Since none of the land-based equipment had enough reach to handle the extremely long piles in a single piece, the first sections of steel H-pile were driven first. Then the prestressed piles were placed in the leads and the protruding steel stubs were welded to the partly driven H-piles. Some of these piles were more than 200 feet long; the longest measured 205 feet.

#### Use floating equipment

In many respects the job was a natural for floating equipment. Yet there is a considerable length of the structure over the flats within the creek-bank levees. This area is simply mud and too soft for land-based rigs. At the start of the job, the contractor engaged a hydraulic dredge to come in and excavate a working channel for the floating equipment in this area.

(Continued on next page)

For more facts, circle No. 220→



**This Groves TD-20 4-In-1 (below) beats dragline** excavating-loading production—on airfield construction near Burlington, Wisconsin! The nimble, fast-swinging 4-In-1 delivers a big daily yardage into bottom dumps—gives crawler mobility, 109-inch track stability, and quick TD-20 forward-reverse "Shuttle-Bar" travel speed! The TD-20 4-In-1 shown is filling its bucket with speedy, load-in-place clamshell action.



**Clamshell action loaders pay off on shovel-type jobs —for S. J. Groves & Sons!**

### 3-yd multiple-action TD-20 4-In-1's handle BIG job range!

"Back-dragging" with exclusive 4-In-1 clamshell action (above) pulls down highwall—mixes stratified layers—replaces big-capacity, power shovel performance on S. J. Groves & Sons New Jersey highway job. Further mixing by clamshell bottom dumping (at left) produces select fill material. In addition, this TD-20 4-In-1 loads out excess materials all over the project, including stumps and boulders — provides earth-rolling bulldozer action for haul road maintenance, wherever needed! Another Groves 3-yd International Drott 4-In-1 loads out fill on this project!

See what it means to multiply your job range and divide your machine investment by four — with an International Drott 4-In-1! Measure exclusive 4-In-1 advantages like pry-over-shoe break-out action, and shock-swallowing Hydro-Spring. Move the "machine-selector" lever—watch how a 4-In-1 can instantly replace one costly limited-duty machine after another, on job after job. See your International Drott Distributor for a demonstration of versatility unlimited!

International Harvester Company, Chicago 1, Illinois  
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

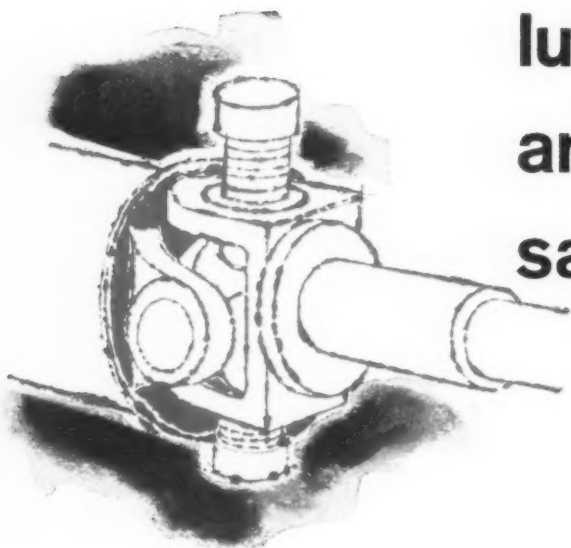


**INTERNATIONAL  
DROTT**



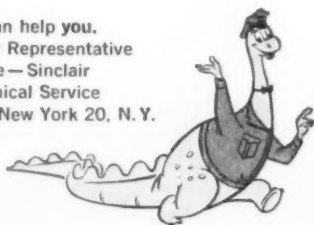
The plywood form for the 2-foot space between the girders, hung from double 2 x 4 needle beams with long she-bolts, is stripped easily and quickly. Two men on the deck remove needle beams and replace she-bolts with special thin she-bolts having long cables attached. The men tap these bolts to break the form loose, then control the lowering of the form by the cables running through 2 x 4 clamps on horses. A workman on a barge under the bridge guides the form onto a stack and unscrews the she-bolts so that they can be pulled back to the deck.

## Universals... lubrication... and how to save money



Sinclair Litholine® multi-purpose grease replaces 3 different ordinary greases—chassis, wheel bearing, water pump. It therefore cuts unnecessary inventory costs. Furthermore, it eliminates the danger of misapplication. This superior lubricant has earned a reputation for lengthening lube intervals—prolonging life of universals and other vital parts. Change to Litholine, now. And when management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Find out how Litholine can help you. Call your nearest Sinclair Representative or write for free literature—Sinclair Refining Company, Technical Service Division, 600 Fifth Ave., New York 20, N. Y. There's no obligation.



For more facts, use Request Card at page 18 and circle No. 221

# SINCLAIR

## Litholine®

### Multi-Purpose Grease

The channel is 160 feet wide, 600 feet long, and was excavated to 6 feet below mean low water. This required dredging as much as 12 feet of mud in some places.

Floating rigs operated in this channel to drive piles, erect forms, place concrete, and erect deck girders. The skid rig used on land was mounted on the deck of Gerwick's Derrick Barge No. 95 for the pile-driving operation. This big wooden barge also carries a diesel-electric-powered 50-ton Clyde Whirley crane with a 95-foot boom. The steel and concrete composite piles were assembled in a jig and welded together before the start of the driving; then the Clyde crane placed the pile in the leads. For the water-borne operation, the prestressed-concrete piles were barged directly from the prestressing plant to the bridge site.

#### Place footings at low tide

From five to eight piles, each with a bearing value of 200 tons, were driven for each pier. These were capped with a 5-foot-wide and 6-foot-high reinforced-concrete cap, the bottom of which is exposed at low tides. The elevation of the bottom of the footings is minus 1.0.

To eliminate the necessity for cofferdamming and dewatering, the contractor formed and poured these caps at low tide. Watching the predicted tide tables and all available forecast information, the contractor scheduled these operations during the time the entire footing was exposed.

The No. 95 Clyde Whirley handled forms and shoring for the workmen and bucketed the concrete into the forms using a Gar-Bro 2-yard bucket. In most instances, the concrete was bucketed directly from transit mixers parked on the old bridge; a small amount had to be barged out from a dock on the bank. Concrete for all the cast-in-place work was supplied by McPhail Co., Inc., San Rafael, Calif.

Columns were formed with circular steel forms supplied by Caral, Inc., Berkeley. The column form sections were assembled on the footings and were braced by scaffold towers erected around them. These towers also provided a place for the workmen to stand. Sectional metal tremies were used as the columns were poured in two lifts.

To provide a base for the construction of the heavy pier caps, the contractor attached a pair of long 36-

CONTRACTORS AND ENGINEERS



inch WF steel beams to either side of the columns at the tops. These beams rested on vertical 12x12 timbers founded on the pier footing and held to the side of the column with bolts anchored in Richmond coil inserts. These had been placed as the columns were built. No other shoring was necessary for the caps.

Prefabricated soffit forms for the caps were placed directly on the steel beams. The side forms were set up on these soffits and tied through with she-bolts. These forms were quickly placed with the aid of either floating or land-based cranes. In addition to the derrick barge, the contractor had a Bay City 25-ton motor crane, a Lorain 20-ton motor crane, and a Lorain 90 crawler mounted on a barge. All of these worked on the forming, concrete placement, or stripping.

#### Build girders in plant

The 264 prestressed girders, all 80 feet long, as well as the precast 25-foot girders, were built in the prestressing plant of Ben C. Gerwick, Inc., at Petaluma. Four new prestressing beds in the plant were used for the first time on these girders. These beds can handle sections up to 105 feet in length and are arranged side by side instead of in the more conventional in-line arrangement.

The forms built to Gerwick's specifications were supplied by Food Machinery & Chemical Corp., Riverside, Calif. Each of the girders carries 36 Roebling 7/16-inch, stress-relieved, seven-wire prestressing strands. Half of these go straight through in the bottom flange of the girder, while the remaining 18 are in the top of the web at the ends of the girders and are harped down at three intermediate points by Food Machinery & Chemical Corp. hold-downs.

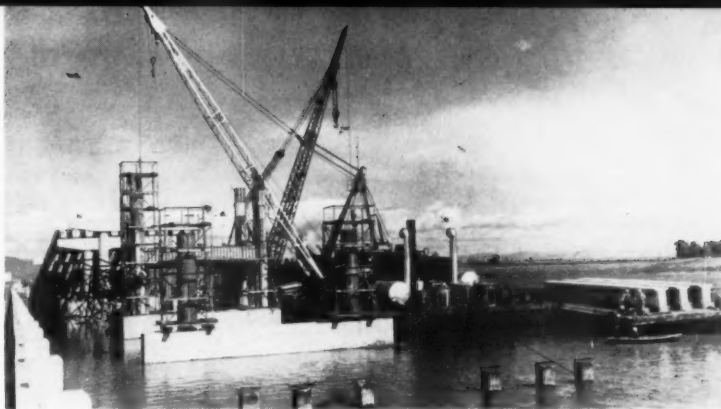
The pretensioning load in the cables was applied by Rodgers 200-ton hydraulic jacks. This load was applied and the cables harped down before the forms were placed.

Concrete for the girders was a 7½ to 8-sack mix attaining a strength of  
(Continued on next page)



Forms built to Gerwick's specifications by Food Machinery & Chemical Corp. are set for a girder at the prestressing yard. Roebling 7/16-inch cable is used, with 18 strands going through the bottom and 18 going through the top. Those through the top are deflected by hold-down devices developed at the Gerwick yard and now made by FM&C.

Derrick Barge No. 95, the Clyde Whirley, sets sectional steel column forms for one of the piers while Derrick Barge No. 125, the American Revolver, continues placing the prestressed girders. The scaffold around the column provides a platform for crews and serves to brace forms.



## AFTER LOAD-FOR-LOAD COMPARISONS, contractor trebles Payhauler fleet!



Producing 380,000 cu. yd. of aggregate for their bypass paving contract (Rt. 277 around Abilene, Texas) Cage Brothers keep six units of their 9-Payhauler fleet busy at this quarry. With three units feeding crusher, and three stockpiling, the plant produces 7,000 cu. yd. of minus 2-in. aggregate daily.

**Ton-for-ton and yard-for-yard**, the road-building Cage Brothers, San Antonio, Texas, compared International Payhauler production with competitive off-highway rigs. Result: They trebled their "65" Payhauler fleet within a year!

Let Superintendent E. A. Rice give you the details:

"First we bought three Payhaulers and three competitive haulers. When we found it took two of them to equal one Payhauler, we got three more Internationals. Now (with more hauling) we have added another three, to give us nine Payhaulers.

"We've never had better equipment. Payhauler power, speed, and fast dumping cut cycle time. Operators go for Payhauler operating ease and riding comfort."

International Payhauler models give you fast get-away with a bonus of turbo-charged diesel power. They have a gear choice to match every load and road. And they provide the power-cushioning leverage of full-floating planetary drive axles, to minimize the slam-bang shock of off-road full-load hauling!

Try Payhauler "pick-up truck" spotting ease—assured by "zip-around" power steering and exclusive high reverse. Prove full-load ramp-climbing "muscle"—and up to 25% faster haul speeds. See how 7½-second dumping and Payhauler operating ease and safety figure sharply in out-hauling other makes, up to 2-to-1! See your International Construction Equipment Distributor for a demonstration.



With extra-large air brakes, air-assisted clutch, and integral hydraulic steering, the "65" Payhauler gives fingertip operating ease—even when hauling 18-ton loads over rough terrain. This pair is stockpiling aggregate for Cage Brothers.



**International  
Construction  
Equipment**

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Dies and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

For more facts, use Request Card at page 18 and circle No. 222



Girders for a low approach span are set by a Manitowoc 3900. This crawler handled the setting of girders on spans that could be reached by land.

(Continued from preceding page)

6,000 to 7,000 psi in twenty days under the plant's steam-curing system. Concrete, supplied by Petaluma Ready Mix Co., was delivered in transit mixers, transferred to Gar-Bro buckets, and placed by an overhead crane running on rails along the bed. When cured, the girders were either loaded on barges for shipment to the job or else stored in the yard to be trucked to the site as required.

#### Cranes erect girders

Where the girders could be set by marine equipment, the contractor

used Gerwick's Derrick Barge No. 125, a 75-ton steam-powered American Revolver with 125 feet of boom. This rig picked up the girders from the barges using a long strongback and set them directly in place on the piers.

On the approach spans, where height was not a critical factor, an old derrick boom was used as a spreader for the two lines from the crane block to the ends of the girder. This relatively light spreader was also used by a Manitowoc 3900 crawler crane which set girders on spans that could be reached from land.

On the high spans near the channel, Derrick Barge No. 125 had to gain every possible inch of lift to get the girders up on the high piers. Two factors helped, the tide and a special strongback.

This strongback consisted of a pair of 36-inch WF beams about 80 feet long, with connecting members which hold them about five feet apart. This same assembly is used as a pair of rails when girders are placed with dollies. The crane holds the strongback by a pair of short cables attached near the center, thus making a relatively close coupling between the block and the strongback. The prestressed girders are hung from the ends of the strongback by a linkage which holds them as close as possible.

With the combination of a high tide and the short coupling, the American Revolver picked the girders off barges one by one and set them on the piers. However, the 18-ton strongback together with a 42-ton girder gave the 75-ton crane a near-capacity load.

#### Finishing deck

When the eleven girders of a span are in place, there are spaces between them about 30 inches wide in which the deck slab must be cast. The curb section on each end must also be formed and placed. The contractor worked out forming methods which permitted all of this work to be done without scaffolding being used under the deck.

Deck forms were supported by double 2x4 hangers placed on top of the girders and spanning from one to the other, and were blocked up from the deck with 1-inch blocks at the ends. Sheets of three-foot-wide 3/8-inch plywood were pulled up under the girder flanges and suspended from the 2x4 hanger beams with she-bolts. These were threaded into studs attached to the plywood sheets. In this way, the form was completely suspended from the deck.

There was no room on the girder flanges to operate buggies, and concrete placing looked like a problem until the contractor improvised a rig for the job. An old Oliver farm-type tractor with widespread front wheels was located, and both front and rear wheels were adjusted so that they were wide enough apart to span from one girder to another over the hanger

## NEW AMSCO 2-PART TOOTH

Special-alloy reversible tips (easy to reverse)  
nearly double tooth digging life...

In quarry work, in cold and hot slag pits... in the roughest of digging tests, these new Amsco® 2-part Simplex teeth have outlasted competitive 2-part teeth more than 2 to 1... at a big saving in tip and adapter replacement time.

You get this longer wearing quality because of the special, rugged alloy used for both tip and adapter. Reversing tips extends digging life even more, yet takes only a few minutes.

Adapters outlast several sets of tips, are equally easy

to replace. Pin lock between tip and adapter seats and locks so securely, metal-to-metal, that even side blows can't jar it loose.

We'll be glad to send you a booklet containing reports by Simplex users and describing this new Amsco tooth completely. Write for it today.



**AMSCO**

American Manganese Steel Division • Chicago Heights, Illinois  
For more facts, use Request Card at page 18 and circle No. 223



beams. A 3/4-yard Gar-Bro concrete bucket was suspended from an improvised A-frame on the rear of the tractor.

Transit mixers moved in to the closest available point and filled the bucket. The tractor was driven to the span being poured, and then it moved along, placing the concrete exactly as needed. Workmen simply vibrated the concrete into place and finished the surface level with the two adjacent girders. A 2-inch asphaltic-concrete surfacing was placed over the deck to complete the roadway.

The real advantage of the form system used on these fill-in slabs was in the stripping. Two workmen on the deck removed the top nuts from the



Superintendent John Ford keeps a watch on the job as the American Revolver raises a girder.

she-bolts and picked off the hanger beams. This left a series of the she-bolts embedded in the slab holding the plywood form up. These bolts were then unscrewed from the top. The two she-bolts on each sheet of plywood were replaced with two special thinner she-bolts to which long lengths of 3/16-inch aircraft cable were attached.

When these special bolts were in place and the others all removed, workmen tapped on the bolts with a hammer to break the form loose. As the form came away, the workmen snubbed up on the cables to control it, then lowered the plywood panel to the ground or to a barge waiting beneath. One workman below stacked the panels and unscrewed the bolts so that workmen on the deck could pull them back up through the holes for re-use on the next panel.

This complete operation actually took only about as long as it takes to read the description of it and required only three workmen.

#### Steel girder spans

Spanning the navigable channel are 160-foot-long, 31-ton steel-plate girders which were furnished and erected under a subcontract by Moore Dry Dock Co., Inc., Oakland, Calif.

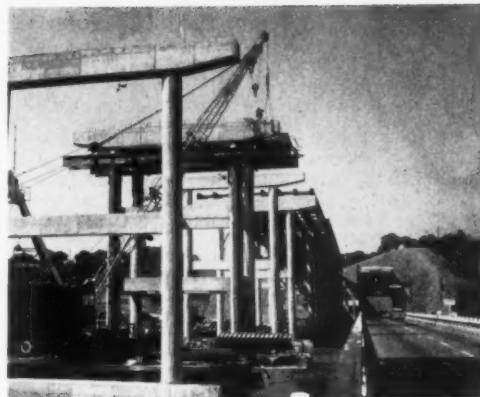
Work on the new bridge started in

February, 1957. After the new structure is opened to highway traffic this month, the contractor will remove the old bridge, salvaging the bascule span for re-use on a secondary road.

Managing the project for the joint venture of Ben C. Gerwick, Inc., and J. H. Pomeroy & Co., Inc., was superintendent John Ford; assistant superintendent was Chuck Lochtefeld. Resident engineer for the California Division of Highways was Myron H. Jacobs. F. W. Panhorst is bridge engineer for the Division, and G. T. McCoy is state highway engineer.

THE END

The new high-level bridge over Petaluma Creek near Novato, Calif., rises next to the old bascule-lift span it will replace. Derrick Barge No. 95, owned by one of the joint-venture contractors, Ben C. Gerwick, Inc., San Francisco, is removing cap forming and shoring. J. H. Pomeroy & Co., Inc., also of San Francisco, is the partner on the job.



## Now one adjustable Blaw-Knox Steel Form for casting all 4 sizes of AASHO bridge beams!

*can be used for box-girders  
and building beams too*

Now Blaw-Knox design leadership makes it possible to cast all four sizes of AASHO approved bridge beams in *one adjustable steel form*. In addition, the versatile form can be adapted to cast box girders, and a wide variety of structural beams. This means that pre-stress operators can cover bigger segments of the market with one basic investment in forms.

Starting with a pair of structural frames, side panels 7", 8", 9", 11" can be mounted vertically to form 28", 36", 45" and 54" bridge beams. The side panels can also be adjusted horizontally on the frames to manufacture additional products of varying contours and dimensions. Bevel panels, fillers, pallets, and end block forms are furnished to meet individual requirements.

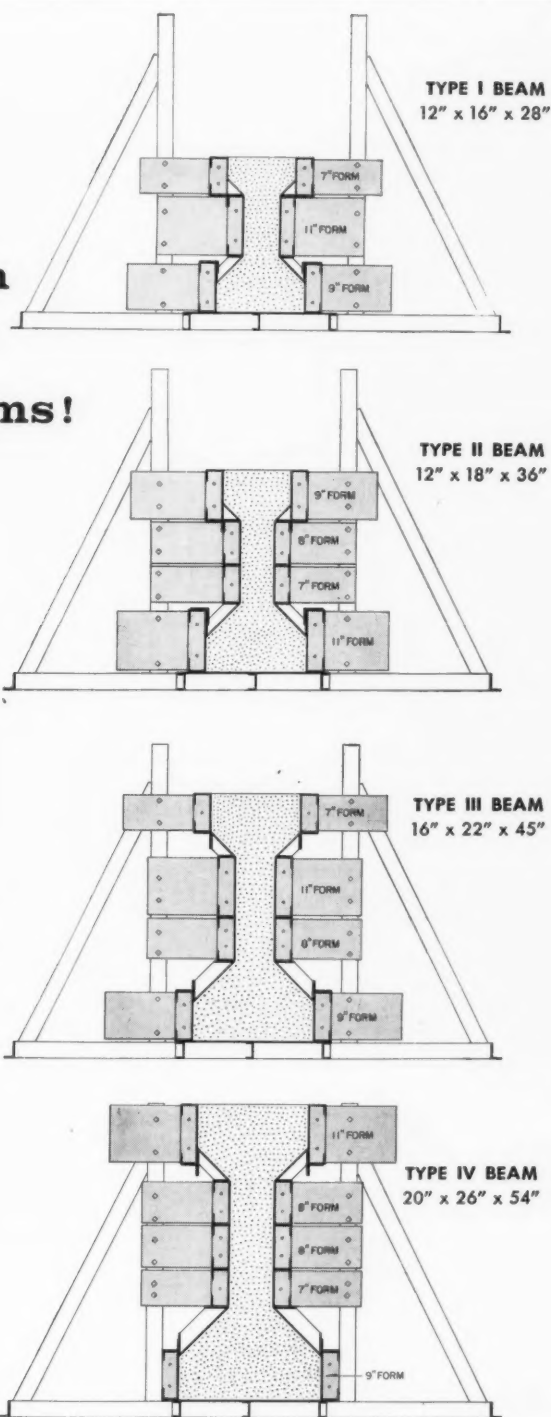
Unit design with interchangeable components keyed to your individual business requirements make the Blaw-Knox *adjustable steel form* your best investment in the booming pre-stress market. You can get the full story by contacting the Steel Forms Department now.

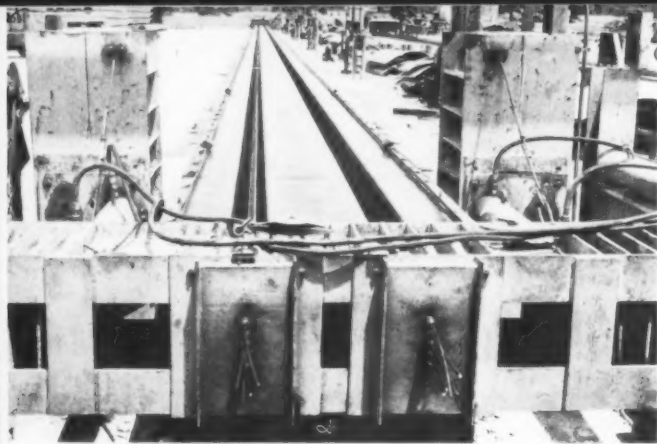


## BLAW-KNOX COMPANY

Blaw-Knox Equipment Division  
Pittsburgh 38, Pa. • Phone: STerling 1-2700

For more facts, use Request Card at page 18 and circle No. 225





View of Campbell's 300-foot-long double-tee bed from the live end. The bed is a permanent concrete installation; only the 16-inch-deep stems are metal lined. Hot water pipes embedded in the concrete keep the bed at a constant temperature.

## A business suit

by WILLIAM T. DARDEN, assistant editor

It isn't news any more when a contractor turns to production of concrete structural units. The increasing use of this highly adaptable material in America's building industry is causing somewhat of a revolution in design and erection procedures, and contractors have been quick to recognize the trend.

As the demand for precast and prestressed-concrete members grows daily, more and more contractors are producing these units as a profitable side line. For most, it represents a carefully planned venture and remains a side line to the contracting business.

Not so for Edward Campbell, a New Jersey contractor turned full-time producer. Almost by accident, Campbell found himself with a fast-growing concrete-product firm on his hands, and today he devotes himself exclusively to making block, special and standard precast units, and large prestressed members.

It all began with the concrete block. Back in 1943, Campbell had just completed a tour of civilian duty with the U. S. Army Corps of Engineers, and was preparing to resume his general contracting business. He needed concrete block, though, and it was pretty hard to come by. So he invested \$2,226 in a block plant and started to produce his own.

From there on the business just seemed to expand naturally. Various types of special precast units were in demand, and Campbell found himself more and more involved in this sort of work. In 1946 he turned to more ambitious precast work, and two years ago he hopped aboard the prestressed bandwagon.

Today, the Campbell company does a \$2 million-a-year business at Vine-land, N. J., serving the southern part of the state. More than a quarter of this dollar volume is accounted for by the prestressed operation.

Campbell recalls that his investment in this business 15 years ago totaled \$3,500. The inventory at that time was worth \$225. His wife kept the books. One plant, a truck driver, and Campbell himself were responsible for the firm's output.

#### Four plants today

Today the Edward Campbell Co. employs more than 100 people. There are four plants on a total of 22 acres. In addition, Campbell operates a \$250,000-a-year building-materials business that sells everything but



## INSLEY 20 ton lorry crane

GANTRY in low position



BACK-HITCH type GANTRY — from high to low position in a few minutes



Removes own counterweight

#### Featuring

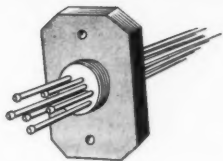
- Full Vision Cab with large windows providing increased safety and operator comfort.
- Back-Hitch Type Gantry reduces raising and lowering time to a few minutes.
- Hammer Head Type Boom with pin or butt connections.
- Pendant Suspension with floating bridle.
- Low Axle Load Distribution for highway travel.

The INSLEY type M REMOVES ITS OWN COUNTERWEIGHT without assistance of another crane and HANDLES ITS OWN BOOM SECTIONS when changing boom length. Floating bridle connects to auxiliary cars on bottom section.

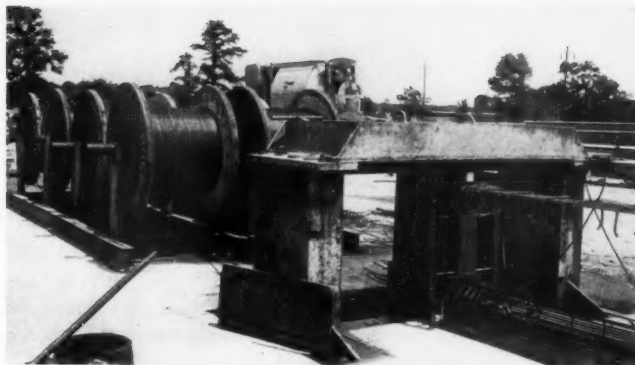


# Business on blocks

Assistant ed



**New Jersey contractor's humble block operation grows to \$2 million precast, prestressed firm**



Spools of Roebling  $\frac{3}{8}$ -inch-diameter strand are mounted on skid frames at the dead end of the 300-foot-long universal bed. The dead end may be moved to any of four positions if shorter members are desired.

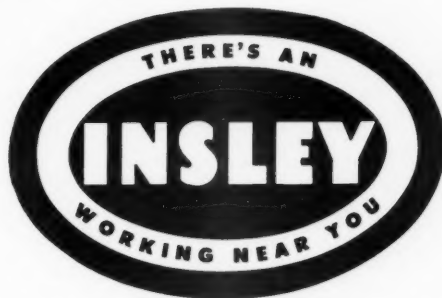
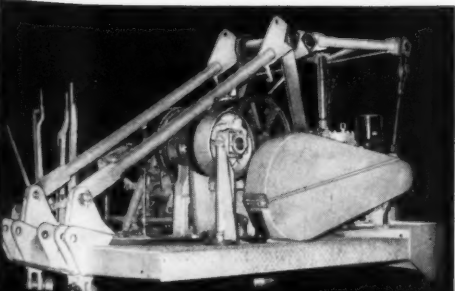
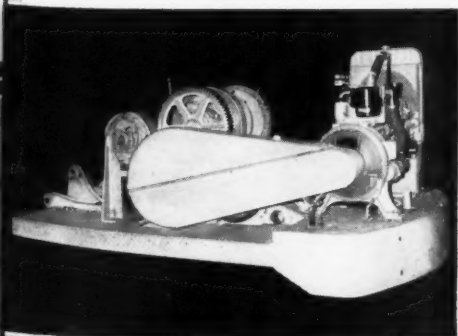
## HAMMER HEAD TYPE BOOM



Hammer head type for maximum hook block clearance. Pin connected boom may be folded. Auxiliary ears are provided on bottom and intermediate sections for folding and changing boom sections.



**ALL DECK MACHINERY LOW AND BACK OF  $\phi$  OF ROTATION**



**INSLEY MANUFACTURING CORPORATION**  
GENERAL OFFICES—INDIANAPOLIS 6, IND.  
WEST COAST DIVISION—LOS ANGELES 54, CALIF.  
**THE MAXI CORPORATION** (Subsidiary) LOS ANGELES 54, CALIF.

For additional information on the Insley Type M, see your Insley distributor or write direct to Insley, Dept. 300, Indianapolis 6, Indiana.

lumber and structural steel to building contractors over a wide area.

Equipment to produce and handle the concrete products is valued at well over \$1 million, and includes two block machines, a concrete lintel machine, two concrete plants and batchers, two prestressing beds, a variety of forms for precasting units, and mobile equipment of every description for handling and transporting the products.

The company's largest operation takes place on a 19-acre site just outside the city of Vineland. Here are set up the prestressing, large precasting, and block plants. Much of the area is given over to stockpiling of the block and precast or prestressed units that are awaiting delivery.

A Blaw-Knox batch plant serves both the precast and prestress plants, the former being inside a building adjacent to the plant. Combined capacity of the regular and auxiliary cement bins is 750 barrels, and bulk cement is brought to the yard by railroad car, trucked to the plant site, and stored in the bins by means of a screw conveyor feeding an enclosed bucket elevator. The three-compartment bin has a capacity of 400 tons. Aggregate is purchased from local suppliers, and the bin is charged by a closed conveyor.

Of the two prestressing beds, one is a 300-foot-long double-tee bed 15 feet wide and having 16-inch stems. Two Rodgers 100-ton hydraulic jacks are used to pretension the Roebling  $\frac{3}{8}$ -inch-diameter strands. Europa strand  
(Continued on next page)



A Silent Hoist 12-ton lift truck with shop-fabricated boom handles Food Machinery forms in 40-foot lengths. Steel angles welded to the top and bottom permit handling of the forms in these lengths. The forms are being placed on the universal bed.

For more facts, circle No. 226



This Blaw-Knox batch plant provides concrete for precasting operations in the building at right. Cement is stored in the bin at left; aggregate is raised to the 400-ton 3-compartment bin at top by means of an enclosed elevator. The hopper at upper right dumps to the batcher inside the building.

(Continued from preceding page)

vises are used. Hot water pipes embedded in the concrete base of the bed and connected to a Continental 125-hp boiler keep the bed at a constant temperature.

A Scoomobile is used to pull the pretensioning strands down to the live end of the bed. An initial load of 1,000 pounds is put on the strands by a Chatillon dynamometer. A wire gate placed over the strands at the live end protects workmen from the whip of a broken strand.

Alongside the double-tee bed is a 300-foot universal bed used to make a variety of shapes. Food Machinery pallets and side forms, the latter with removable inserts, are used on this bed. The side forms are braced at top and bottom with steel angles in 40-foot lengths, and are handled by a Silent Hoist 12-ton lift truck. Steam pipes are attached to the bottom braces.

#### Movable dead end

The universal bed has a movable dead end which can be brought forward for 200, 90, 60, or 40-foot pours. This results in a considerable saving



A Jaeger transit mixer mounted on an International truck chutes concrete to the double-tee bed while workmen use a Stow screed to finish the concrete. Cured double-tee beams are stockpiled in the background.

in strand when the firm has an order for shorter members.

A Budget 1/2-ton hoist, traveling on an overhead frame straddling the live ends of the two beds, moves the Rodgers jacks from one bed to the other.

After a pour, Horn curing compound is sprayed atop the concrete, and curved metal sheets are placed on top of the form to bridge the concrete and protect it from rain or other effect of the weather.

Stow vibrators and screeds are used to vibrate and strike off the freshly

poured concrete, which is delivered by either a Jaeger 3 1/2-yard mixer mounted on an International truck or a Rex mixer mounted on an Auto-car truck.

A Forney compression tester in the adjacent laboratory is used to test sample cores of concrete about 15 hours after the pour. Then, if satisfactory strength has been achieved, the wires are detensioned and the forms stripped. The beams are lifted from the bed by the Silent Hoist truck and stockpiled nearby.

Inside the precast plant, dry mix

from the Blaw-Knox plant is batched to a Fanning-Schuett traveling hopper which rides a rail to a Besser mixer. The mixer also rides on a rail between two bays, dumping to Gar-Bro 1-yard buckets handled by two Wright 3-ton overhead traveling cranes. These buckets travel the length of the bays, pouring directly to the precast forms.

The block plant, located in the same yard, has a Butler 400-ton aggregate bin, a Besser weight batcher, and two Besser 50-cubic-foot mixers. Two Besser Super Vibrapac machines

## How perforated pipe drains water that seeps upward

Every good engineer knows the havoc that can be caused by excessive ground water. And much of the trouble can be caused by capillary water that seeps up from a reservoir of "free water" underground.

Perforated pipe made from Beth-Cu-Loy galvanized corrugated sheets is very effective in removing free ground water which supplies the capillary water to the subgrade. Properly installed, such pipe collects and removes ground water which first percolates downward by gravity through porous material, then seeps through the perforations into the pipe.

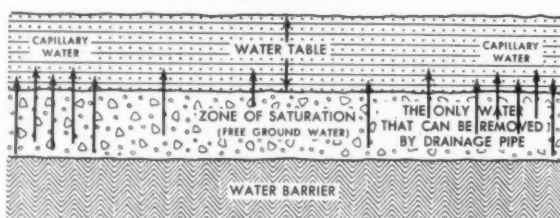
Perforated pipe is placed in a trench of predetermined depth, usually with the perforations down. In certain cases a series of parallel trenches is required, particularly where there are wide areas with the

ground-water level directly beneath the surface of the ground.

Pipe made from Beth-Cu-Loy sheets is ideal subdrainage applications. Such pipe is strong, lasting and relatively inexpensive. It is flexible, which enables it to enlist the aid of the surrounding material to support the imposed loads. In all respects Beth-Cu-Loy meets the rigid specs of the AASHTO

Bethlehem does not fabricate culvert or drainage pipe. But we do manufacture galvanized Beth-Cu-Loy (copper-bearing steel) sheets which fabricators make into pipe. If you would like further information about Beth-Cu-Loy, or the pipe made from it, just write the address below and ask for Booklet No. 425 "Solving Drainage Problems."

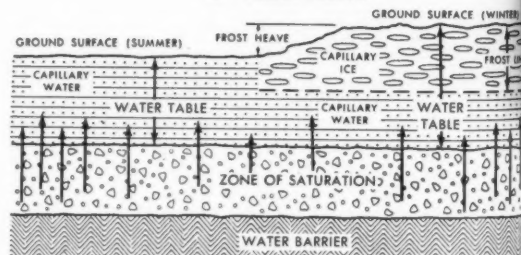
#### A - GROUND WATER



**REMOVE FREE WATER.** Water that enters the soil from the surface gravitates downward until it reaches the "zone of saturation." As shown in the sketch, this is the only water that can be removed by drainage pipe. However, with this free water removed, the amount of capillary water is greatly reduced since capillary water in the soil depends on the water table, and will fluctuate accordingly.

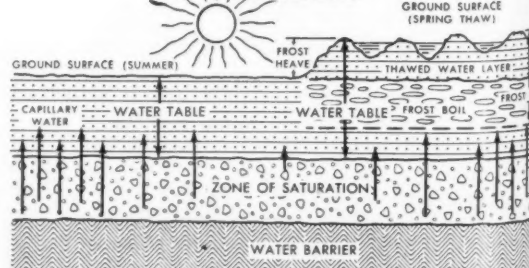
**FROST BOIL—ANOTHER VILLAIN.** Frost boil acts like an ice barrier, preventing thawed surface water from percolating by gravity to the water table below. Under a pavement, surface soil water can also be sucked up by the pumping action of passing traffic. This water is very harmful because it lowers the stability of the soil in the subgrade, and when the water freezes, it can damage or destroy the surface of the highway.

#### B - FROST HEAVE



**FROST HEAVE RAISES HAVOC.** Research indicates that capillary water is the major cause of frost heave. Freezing seems to withdraw water from the soil, and this free water forms ice. Soil and water become frozen as a mass. More capillary water is attracted to the soil, and is in turn expelled as free water. This continues until the supply of capillary water is exhausted or cut off by a rapid rate of freezing.

#### C - FROST BOIL





s batched  
ling hop-  
a Besser  
on a rail  
to Gar-  
by two  
traveling  
vel the  
directly  
  
in the  
-ton ag-  
batcher,  
t mixers.  
machines

turn out 1,080 blocks an hour each. The blocks are handled on pallets and placed on racks which are then moved into curing rooms. Only seven men are required to operate the block plant. Normally, the plant operates on two shifts.

Campbell likes to keep a stockpile of about 400,000 blocks (8-inch equivalents) on hand, and these are piled up in the yard adjacent to the plant.

#### Special shapes

Campbell's fourth plant is set up on a 3-acre site which also contains

the building that houses business and engineering offices. This plant is devoted to the manufacture of smaller, special precast units, such as items for homes, gardens, farms, etc. With the exception of the machine-manufacture of concrete lintels, the operation here is all hand work.

The lintel machine is a precaster which manufactures 11-foot lintels. A Stearns 50-cubic-foot blade mixer, a Fanning-Schuett 600-barrel cement bin, and a 150-ton six-compartment aggregate bin comprise the batch plant. An Ingersoll-Rand 165-cfm



Small units involving hand work and concrete lintels are manufactured in this plant. The batch plant at rear consists of a Fanning-Schuett cement bin and a 150-ton aggregate bin. The Towmotor lift truck (center) handles the units after forms are stripped.

ater

he surface

s is ideal  
strong, lo  
s flexible,  
e surround  
n all respo  
the AAS  
t or drain  
Beth-Cu-  
ricators m  
mation ab  
just write  
t No. 425

URFACE (WINTER

PROT LINE

WATER

ABLE

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

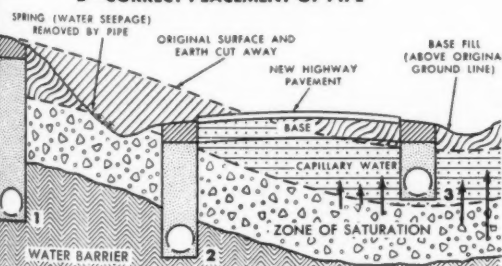
33

34

35



#### D-CORRECT PLACEMENT OF PIPE



#### E-GROUND WATER REDUCED



**INCORRECT PLACEMENT OF PIPE.** Pipe 1 will intercept the ground water that became a problem when a bank was cut away during construction of a new highway. Pipe 2 is placed correctly to intercept free ground water on the side of the road slope. Pipe 3, however, would be ineffectual for two reasons: it is placed on the wrong side of the new highway to intercept the ground water before it reaches the foundation; the trench is not deep enough to permit the pipe to intercept the ground water under any circumstances.

**GROUND WATER REDUCED.** Here is an effective use of perforated pipe for lowering the water table. When properly designed and laid in trenches parallel to the roadway, the perforated pipe will draw off ground water, as shown.

For further information about Beth-Cu-Loy, and the pipe made from it, write to the address below for copy of Booklet 425-A, "Solving Drainage Problems."

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 227

SEPTEMBER, 1958

compressor supplies air for operation of the lintel machine gates, vibrating, stripping of the forms, and similar work.

Other equipment at the plant includes a Besser block splitter, a Tabor casting machine for small shapes, Stow vibrators, and a Hyster and two Towmotor fork-lift trucks. A Continental 50-hp steam boiler provides steam for curing.

Five welders and carpenters are kept busy constantly fabricating molds and forms for the entire Campbell operation, and the firm has a bill of anywhere between \$1,200 and \$2,000 a week for this form work. Strip bond breaker is used to strip forms and molds.

Among the four plants, the Campbell company uses about a carload of cement a day. Brands used include Nazareth, Lehigh, Penn-Dixie, Lone Star, and Medusa.

Campbell block and small precast units are supplied to jobs in a wide area of southern New Jersey. The large precast units and prestressed members are delivered in Fruehauf platform trailers or De Hart pole trailers to projects within a 150-mile radius of Vineland. Campbell does about 75 per cent of the erection work for these larger units, but hires the men and equipment for this operation as the need arises.

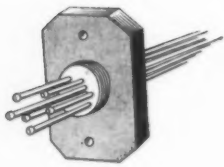
The engineering and sales department of the firm works closely with engineers in the specification of particular shapes for jobs requiring precast or prestressed members.

#### Personnel

The Edward Campbell Co. is a partnership involving Mr. Campbell; two of his brothers-in-law; Joe Darby, who is manager of the prestressing and precasting plants and handles purchasing and distribution; and Solve Falsetto. Campbell himself oversees design in addition to managing the entire firm. John Courter is general superintendent, manages the block plant, and has charge of buying equipment. George Courter is controller of the firm.

Solve Falsetto is personnel director and has charge of cost accounting, which Campbell points out is a most important phase of this operation.

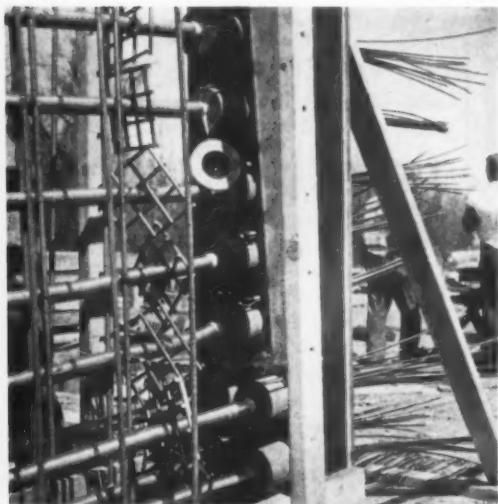
THE END



(Additional photo on front cover)



Adjacent to the twin-bridge crossing of the Des Moines River, 101½-foot girders are post-tensioned. The Koehring 304 handles a form section.



A prestressed conical wedge, made by Freyssinet Co., Inc., holds the flexible tubing containing the wires.

## Post-tensioned bridge girders turned out at rate of two a day

*Setup for threading twelve wires through flexible tubing and unit for holding tension on wires make work go fast*

by **BILL ALLEN**  
field editor

Post-tensioned girders 101½ feet long rolled off the casting bed at the rate of two a day to speed work on a twin-bridge crossing of the Des Moines River, near Des Moines, Iowa.

To maintain this pace, the contractor made use of modern tensioning techniques, a fast-moving crew, and a fair share of ingenuity. A total of 84 girders was built on the approach fill on a 6-girder casting bed.

Jensen Construction Co. and United Contractors, both of Des Moines, started work on the \$550,000 contract in January of this year and expect to complete the bridge this month. Brown & Blauvelt, New York, N. Y., is the designer of the unusual bridge, while Freyssinet Co., Inc., also of New York City, is responsible for the design of the girders.



Before the jack is put on the wires, the male plug is hammered into position in the middle of the wires. Twelve slots in the plug fit the 12 wires.



A common way of getting girders to the piers was with a tractor and crane. A Cat D6 pulls the dolly downhill while the American hangs onto the after end of the girder.



A hydraulic jack elongates 12 wires in the tendon 5 to 6 inches. Elongation is checked against the gage pressure on the Seco hydraulic pump unit.



A girder spanning from abutment to pier is lifted into place by a Manitowoc 2000 and the American. The American and a dolly were used to get the 101½-foot girder into position; then the Manitowoc lifted one end from the dolly.



In turning out the 84 post-tensioned girders for the Des Moines River crossing, Jensen Construction Co. and United Contractors used jacking and grouting equipment furnished by the Prestressed Concrete Division of Intercontinental Equipment, Inc., New York, N. Y. Each jack was activated by a Seco hydraulic pump, made by Simplex Engineering Co. and driven by a Wisconsin 1-cylinder gasoline engine. Post-tensioning wires were furnished by American Steel & Wire Division of U. S. Steel Corp. Steam for curing was supplied by a Cleaver-Brooks 150-hp boiler. Freysinet Co., Inc., which designed the girders, also makes the special precast conical wedge used to hold tension on the wires. A Koehring 304 crane bucketed concrete to the girder forms.

An Engineered Equipment batch plant was used to turn out concrete for the job, and a Wagnermobile front-end loader was used to feed the 3-compartment bin of the plant.

An American Model 599 40-ton crane and a Cat D6 tractor were used to carry girders down the approach fill so that they could be hoisted into position. The American crane and a Manitowoc Model 2000 lifted the girders into place. Cavity sections between girders were poured by the Koehring 304, handling a Gar-Bro ¾-yard bucket; the concrete was delivered to the crane by a Transcrete 3-yard mixer on a Ford F700 truck.

#### Build bridge over dry land

The 7-span 710-foot twin bridge will link the 4.3 miles of construction, now under way on Interstate 35, which will bypass Des Moines north of the city. Although the bridge was built over dry land, its two 30-foot roadways will soon carry traffic over the relocated channel of the Des Moines River. As part of the highway construction, the channel is being changed to cut out a bend in the river.

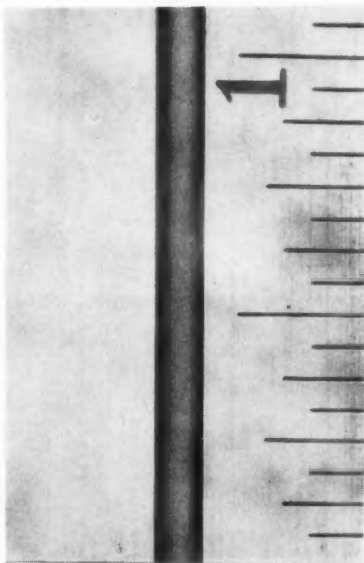
Since the water was not flowing under the bridge during construction, work on the reinforced-concrete piers was simplified. A high water table, however, made it necessary to use a wellpoint system in excavating for the block footings. With the water out of the excavation, it was no problem to drive the 30 H-beam piles that support each pier. The piles were driven as much as 45 feet down to shale.

#### Concrete girders

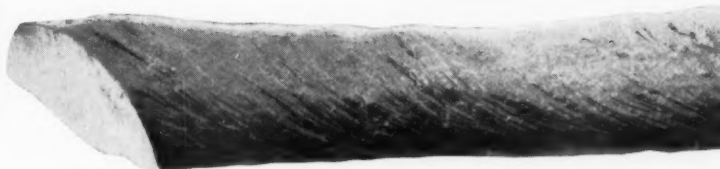
By making all the spans the same length, the designer greatly simplified the construction of the girders. All 84 of the I-shaped girders are identical. They measure 101½ feet

(Continued on next page)

Moving girders into position for the lift was sometimes a tricky job. An American 599 backs down the steep incline from the casting bed while the rear of the girder rests on a dolly. The dragline of a Manitowoc 2000 keeps the dolly from rolling too fast.



Measure the build-up height...



Clock the deposition rate...



Check all the welding features of the new

#### STOODY IRON POWDER BUILD-UP ELECTRODE!

Here's a better answer to today's build-up requirements on parts of carbon and low alloy steels. Stooddy Iron Powder Build-Up makes tough, rigid deposits of high compressive strength, insuring ample support for hard-facing overlays. Deposits are forgeable, resistant to cold flow and deformation, won't spall, work-harden or crack. Deposits are also machineable with preheat, will not exceed 45 Rc in hardness even when severely quenched.

Unlike most build-up materials, Stooddy Iron Powder Build-Up does not depend upon carbon to develop hardness! Its high alloy content produces a more uniform Rockwell hardness despite wide variations in base metal analysis.

Here's a better, more dependable, general purpose build-up electrode that puts down more metal in a single pass, welds with less spatter and lays down more pounds per hour at a lower cost per pound! Order Stooddy Iron Powder Build-Up from your Stooddy Dealer today. Check the Yellow Pages of your phone book or write direct.

Literature available

#### STOODY COMPANY

11904 East Slauson Avenue • Whittier, California

For more facts, use Request Card at page 18 and circle No. 228

(Continued from preceding page)



Crews set reinforcing steel at one end of the bridge while form work goes on in the center section. In the background are the batch plant and casting beds.

long and 5 feet deep, and each weighs 40 tons. Each girder contains nine 12-wire tendons stressed to a final tension of 124,900 psi. The tendons, which are encased in flexible tubing, sag to a level of from 3 to 15 inches above the bottom of the girder at the mid-point.

To provide a casting bed large enough to hold six girders, the contractor poured a 6-inch slab (10 inches thick under the ends of the girders) on the east approach fill near the bridge. Each girder was formed on a plywood bottom which rested on transverse 4x4's. The transverse members were nailed to two longitudinal 2x4's that were set in the concrete. Steam for curing was piped in from a 150-hp boiler.

Contributing to the speed of the

operation was an ingenious setup for threading the twelve 0.276-inch wires through the flexible tubing. The coils of wire were first put on a twelve-reel rack. The reels, obtained at bargain prices, were built out of old steel-spoked equipment wheels.

The reels fed onto a wooden trough that held the 203-foot lengths of flexible tubing. The first step in threading the bundle of 12 wires through the tubing was to shove a single wire through the length of the tubing. A special holding device at the end of this wire grabbed the bunch of twelve and pulled them through the flexible tubing. A small winch, at the opposite end from the reels, did the pulling. The tubing was cut in half to run the length of two girders.

Special steel bulkhead plates held

**Call us for  
on-the-job  
service—  
any tire,  
any job,  
anywhere!**



**F**AST, efficient B.F. Goodrich on-the-job tire service is as close as your phone. We are trained for the specialized task of servicing off-the-road tires, no matter how big the tires, how intricate the equipment, how complicated the repair job.

Our B.F. Goodrich Servicemobiles are equipped with the latest power tools and devices to give you expert service. Save on costly downtime. Eliminate unnecessary delays that destroy work schedules. Cut

operating costs. *Call us* the next time you need on-the-job tire service.

Why not call *right now* to find out about our complete program of B.F. Goodrich preventive tire maintenance. Without obligation we will inspect all your tires, point out tires that should be repaired or replaced, select tires for retreading by factory-tested and proved B.F. Goodrich methods, set up a proper inflation program and start you on a program of regular tire rotation and inspection.

**Specify** B.F. Goodrich Tubeless or tube-type tires when ordering new equipment



B.F. Goodrich Servicemobiles are equipped with hydraulic cranes, pneumatic wrenches, bead jacks and all the latest tools for efficient on-the-job tire service.

**See us for B.F. Goodrich off-the-road tires and service or check Yellow Pages of phone book for more complete listing in your area**

**B.F. Goodrich**

CONTRACTORS AND ENGINEERS



the ends of the nine tendons in place. The plates also held the female member of the precast-concrete conical wedge. This member, which was cast into the end of the girder, held the tension on the wires after they had been pulled. The slotted male member of this assembly, also of precast concrete, was driven in from the outside after tensioning.

At intermediate points along the sagging tendon, temporary vertical rods held the flexible tubing in its correct position. After the reinforcing steel had been set, the tendons were wired to the reinforcing bars.

To maintain the production schedule of two girders per day, the contractor used four sets of forms. The wooden forms, built up in sections, were faced with marine plywood.

An efficient batch plant, set up on the site, speeded the pouring of the girders. An unusual but effective piece of equipment—a front-end loader—made the 30-foot-high lift to charge the 3-compartment bin of the aggregate batcher. At the aggregate batcher, both water and Pozzolite were metered out to the transit-mix trucks. The plant also contained a 2-spout cement batcher with a 500-barrel overhead silo. All controls were manual.

The transit-mix trucks made the short trip to the casting bed, and the concrete was bucketed to the girder forms by a crane. The 5,000-pound concrete was vibrated as it was placed.

Steam curing started four hours

(Continued on next page)



The Koehring 304 on the job uses a Gar-Bro ¾-yard bucket to pour cavity sections at the ends of the girders. The Transcrete 3-yard mixer on the Ford F700 truck delivers concrete to the crane.

## B.F. Goodrich

**ALABAMA**  
ANNISTON . . . Adams 2-5271  
BIRMINGHAM . . . Fairfax 2-0381  
DECATUR . . . Elgin 3-9523  
GADSDEN . . . Liberty 6-5271  
HUNTSVILLE . . . Jefferson 6-2487  
MOBILE . . . Hemlock 2-2681  
MONTGOMERY . . . Amherst 2-1681  
SELMA . . . Trinity 4-8254  
TUSCALOOSA . . . Plaza 8-8312

**ARIZONA**  
PHOENIX . . . Alpine 3-6168  
TUCSON—Baum & Adamson . . . Main 3-3681  
YUMA—Conner Tire Co. . . Sunset 2-2547

**ARKANSAS**  
BLYTEVILLE . . . Poplar 3-9116  
CAMDEN . . . Temple 6-8334  
EL DORADO . . . Union 3-7188  
FORT SMITH . . . Sunset 3-4124  
HOT SPRINGS . . . National 3-5574  
LITTLE ROCK . . . Franklin 4-5666  
MALVERN . . . 409  
PINE BLUFF . . . Jefferson 4-5123

**CALIFORNIA**  
BAKERSFIELD . . . Fairfax 4-4701  
BELL GARDENS—Gardner Tire Sales . . . Ludlow 8-5165  
DOWNEY—Paramount Tire Co. . . Ludlow 7-5789  
EUREKA . . . Hillside 2-5700  
FRESNO . . . Adams 3-5218  
LOS ANGELES . . . Richmond 9-6171  
MODESTO . . . Lambert 2-1005  
OAKLAND . . . Highway 4-2800  
SACRAMENTO . . . Gilbert 2-3811  
SAN BERNARDINO . . . Turner 8-0947  
SAN DIEGO . . . Belmont 2-3131  
SAN FRANCISCO—Perry & Whitelaw, Inc. . . Underhill 1-1801  
SAN JOSE . . . Cypress 5-8050  
SAN MATEO—Perry & Whitelaw, Inc. . . Diamond 2-3051  
STOCKTON . . . Howard 6-8691  
VAN NUYS—Ben Rudnick . . . Stanley 3-2086

**COLORADO**  
COLORADO SPRINGS . . . MEIrose 4-8861  
DENVER . . . Keystone 4-2175  
PUEBLO . . . Lincoln 4-1863  
STERLING . . . Lawrence 2-0471

**CONNECTICUT**  
BRIDGEPORT—Bridgeport Tire & Recapping Co. . . Forest 8-1644  
HARTFORD . . . Jackson 2-2121  
NEW HAVEN—Peat & Voigt, Inc. . . Locust 3-1086  
NORWICH—Falcon's Servicenter . . . Turner 7-8051

**DISTRICT OF COLUMBIA**  
WASHINGTON . . . Republic 7-3525

**FLORIDA**  
DAYTONA . . . Clinton 3-8222  
FT. LAUDERDALE . . . Jackson 4-8682  
JACKSONVILLE . . . Elgin 4-2601  
LAKELAND . . . Mutual 2-0331  
MIAMI—Norton Tire Co. . . Franklin 4-0538  
OCALA . . . Marion 2-4254  
ORLANDO . . . Garden 3-3161  
PANAMA CITY . . . Poplar 3-3881  
PENSACOLA . . . Hemlock 8-3181  
ST. PETERSBURG . . . 7-1197  
TAMPA . . . 8-0181  
WEST PALM BEACH . . . Temple 2-4181  
WINTER HAVEN . . . Cypress 3-6325

**GEORGIA**  
ALBANY . . . Hemlock 2-6491  
ATLANTA . . . Jackson 2-5035  
AUGUSTA—Bowen Bros. Hardware Co. . . 4-5581  
COLUMBUS . . . Fairfax 2-3581  
GAINESVILLE—Gainesville Tire Co. . . Leno 2-2551  
MACON . . . 3-4456  
ROME . . . 2-2846  
SAVANNAH . . . Adams 6-0631

**IDaho**  
BOISE—Hill's . . . 4-5557  
IDAHO FALLS—Yellowstone Tire Co. . . Jackson 2-7513

**ILLINOIS**  
ALTON . . . 3-7754  
AURORA . . . 7-1116  
BLOOMINGTON . . . 7-6213  
BLOOMINGTON—C. W. Frey & Son . . . 4-3259  
BLUE ISLAND . . . Fulton 6-5200  
CAIRO . . . Main 86  
CENTRALIA . . . 5669  
CHAMPAIGN . . . Fleetwood 2-5121  
CHICAGO . . . Lombard 7-8500  
CHICAGO—Chicago Tire Co. . . Monroe 6-8400  
CHICAGO HTS . . . Skyline 5-2532  
DECATUR . . . 5256

**INDIANA**  
ELMHURST . . . Terrace 2-3160  
EVANSTON—Taich Tire & Battery . . . Greenleaf 5-5230  
FOREST PARK . . . FO 5-5100  
GALESBURG—Quint's Service . . . 4961  
JACKSONVILLE . . . Chestnut 5-6194  
JOLIET . . . 6-5461  
LA SALLE—Tom's Tire Shop . . . 931  
MATTOON—Mack's Tire Service . . . Adams 5641  
MOUNT VERNON—Ranmar's Standard Tire Co. . . 60  
OLNEY . . . Express 3-2137  
PEORIA . . . 4-4181  
QUINCY . . . Baldwin 2-4600  
ROCKFORD . . . 8-6374  
ROCK ISLAND . . . 8-6374  
SPRINGFIELD . . . 3-3613  
VANDALIA . . . 638  
WAUKEGAN . . . Delta 6-7733

**IOWA**  
CEDAR RAPIDS . . . 4-5165  
CLINTON . . . Chapel 2-6020-27  
DAVENPORT . . . 2-2685  
DES MOINES . . . Cherry 4-7278  
FT. DODGE . . . Olive 2-4494  
MAQUOKETA—O. K. Tire Store . . . Olive 2-4494  
MASON CITY . . . Garden 4-4935  
MUSCATINE . . . Amhurst 3-2824  
STARWOOD—Loddy Oil Co. . . 3111  
WATERLOO . . . Adams 4-4649

**KANSAS**  
HUTCHINSON . . . Mohawk 2-0261  
KANSAS CITY . . . Mayfair 1-2205  
KANSAS CITY—Missouri Valley Tire Co. . . Mayfair 1-8515  
SALINA . . . Taylor 3-2271  
TOPEKA—Carothers Tire Co. . . Central 4-5643  
WICHITA—Broadway Tire Co. . . Amherst 2-8621  
WICHITA . . . Forest 3-1254

**KENTUCKY**  
LEXINGTON . . . 2-8677  
LOUISVILLE . . . Union 5-4141  
MAYFIELD . . . 84  
PADUCAH . . . 5-5454

**LOUISIANA**  
ALEXANDRIA . . . 9514  
BATON ROUGE . . . Dickens 2-6995  
BOGALUSA . . . Republic 2-4284  
LAFAETTE . . . Center 4-8388  
LAKE CHARLES . . . Hemlock 6-0647  
MONROE . . . Fairfax 3-0386  
NEW ORLEANS . . . Jackson 2-0191  
SHREVEPORT . . . 2-3174

**MAINE**  
LEWISTON . . . Lewiston 2-9051

**MARYLAND**  
BALTIMORE . . . Belmont 5-9054  
HAGERSTOWN . . . Regent 4-4780

**MASSACHUSETTS**  
BOSTON—Merchants Distributors, Inc. . . Kenmore 6-4780  
BROCKTON . . . Union 3-0100  
LYNN . . . Lynn 2-0297  
NORTH ADAMS . . . Mohawk 3-8849  
SPRINGFIELD . . . Republic 3-6666  
W. SOMERVILLE . . . Prospect 6-4469  
WORCESTER . . . Pleasant 5-4397

**MICHIGAN**  
BENTON HARBOR . . . Walnut 5-0041  
DEARBORN . . . Luzon 1-8900  
DETROIT . . . Forest 6-4900  
ESCANABA . . . 4620-21  
FLINT . . . Cedar 2-0169

**MINNESOTA**  
AUSTIN . . . Hemlock 7-4533  
DULUTH . . . Randolph 4-8505  
HIBBING—Hyde Supply . . . Amherst 3-7511  
MINNEAPOLIS . . . Federal 5-1195  
MINNEAPOLIS—Jerry Oyaa Tire Co. . . Federal 9-0451  
ST. PAUL . . . Capitol 2-3617  
WINONA—Nelson Tire Co. . . 2306

**MISSISSIPPI**  
BILOXI . . . Idlewood 6-9151  
COLUMBUS . . . Fairfax 8-7150  
CORINTH . . . 8628  
GREENWOOD . . . 70  
GULFPORT . . . University 4-2672  
HATTIESBURG . . . Union 4-6474  
JACKSON . . . 2-0846  
LAUREL . . . 4375  
MERIDIAN . . . 2-3128  
NATCHEZ . . . 2-1651  
VICKSBURG . . . 563  
YAZOO CITY . . . 2164

**MISSOURI**  
CARUTHERSVILLE . . . 15  
HANNIBAL . . . 138  
JOPLIN . . . Mayfair 4-4141  
KANSAS CITY . . . Valentine 1-4777  
MEXICO . . . Justice 1-3040  
POPLAR BLUFF—J. A. Parker Tire Co. . . Sunset 5-3938  
ST. CHARLES . . . Randolph 4-3646  
ST. LOUIS . . . Forest 7-9300  
SPRINGFIELD . . . 4-2561

**NEBRASKA**  
LINCOLN . . . 2-4497  
OMAHA . . . Jackson 4024

**NEVADA**  
RENO . . . Fairview 3-6511

**NEW JERSEY**  
BRIDGETON . . . 9-7191  
CAMDEN . . . Woodlawn 4-3191

**NEW MEXICO**  
ALBUQUERQUE . . . Chapel 3-5587  
GALLUP . . . Union 3-3141  
SANTA FE . . . 3-6365

**NEW YORK**  
ALBANY . . . 4-8115  
AMSTERDAM—Tension Tire Wholesalers Victor 2-2250  
BUFFALO . . . Grant 4040  
NEW YORK . . . Judson 2-1030  
NIAGARA FALLS . . . 5-1275  
POUGHKEEPSIE . . . Globe 2-9030  
ROCHESTER . . . Glenwood 3-2838  
SYRACUSE . . . Granite 6-4016  
UTICA . . . 3-7636

**NORTH CAROLINA**  
ASHEVILLE . . . Alpine 3-2726  
CHARLOTTE . . . Edison 3-4134  
FAYETTEVILLE . . . Hemlock 2-3175  
GREENSBORO . . . Broadway 2-3197  
RALEIGH . . . Temple 3-3831

**NORTH DAKOTA**  
FARGO . . . 2-7461

**OHIO**  
ASHLAND . . . 3992-1  
CHILLICOTHE . . . Prospect 2-9670  
CINCINNATI . . . Cherry 1-4050  
CLEVELAND . . . Prospect 1-2650  
COLUMBUS . . . Capitol 1-6661  
DAYTON . . . Baldwin 3-9181  
ELYRIA . . . Fairfax 2-3711  
HAMILTON . . . Twinbrook 3-4711  
MANSFIELD . . . Lafayette 4-5141  
MARIETTA . . . Frontier 3-2066  
MARION . . . 9-2158  
NEWARK . . . Fairfax 2-2401  
NORWALK . . . 2-7171  
TOLEDO . . . Cherry 3-1256  
WOOSTER—Strock Tire Company . . . Howard 2-8906  
ZANESVILLE—Goss Supply Co. . . Gladstone 3-0328

**OKLAHOMA**  
ENID . . . Adams 4-5121  
MIAMI—Miami Sales Company . . . Kimball 2-2888  
OKLAHOMA CITY . . . Forest 5-1347  
TULSA . . . Luther 5-1221  
TULSA—Tom P. McDermott, Inc. . . Diamond 3-8188

**OREGON**  
PORTLAND . . . Belmont 6-2106  
PORTLAND—Mel Goodin Tire Co. . . Belmont 5-4127  
SALEM—Russell's Tire Service . . . Empire 2-8651

**PENNSYLVANIA**  
ALLENTOWN . . . Hemlock 3-3248  
BETHLEHEM . . . University 7-4184  
ERIE . . . 2-3205

**LANCASTER** . . . E. Express 2-2196  
HARRISBURG . . . Cedar 4-6296  
HAZELTON—Schultz's . . . Gladstone 4-2481  
JOHNSTOWN—McNally Tire & Rubber . . . 5-4321  
PHILADELPHIA . . . Pioneer 3-1134  
PITTSBURGH . . . Museum 2-8310  
POTTSTOWN . . . Faculty 3-8410  
READING . . . Franklin 4-2274  
TURTLE CREEK . . . Electric 1-2077  
WILKES-BARRE—Economy Gas & Oil Co. Valley 3-0169  
YORK—L. J. Allen Co. . . 5728

**RHODE ISLAND**  
PROVIDENCE . . . Dexter 1-9800

**SOUTH CAROLINA**  
CHARLESTON . . . Raymond 2-9391  
COLUMBIA . . . Alpine 4-8135

**TENNESSEE**  
CHATTANOOGA . . . Amherst 7-1178  
CLARKSVILLE . . . Midway 5-5606  
DYERSBURG . . . ATwater 5-4820  
JACKSON . . . 7-8541  
KINGSPORT . . . Circle 6-8191  
KNOXVILLE—Tinsley Tire Co. . . 5-0286  
MEMPHIS . . . Jackson 5-9477  
MEMPHIS . . . Broadway 5-8121  
MEMPHIS . . . Jackson 7-3351  
MORRISTOWN . . . 55  
NASHVILLE . . . Alpine 6-8353

**TEXAS**  
AMARILLO . . . Drake 4-8321  
AUSTIN . . . Greenwood 6-9155  
BAY CITY . . . Circle 5-8329  
BAYTOWN . . . Justin 2-8254  
BRYAN—Brazaas Tire Co. . . Taylor 3-3078  
CORPUS CHRISTI . . . Tulip 4-8841  
DALLAS . . . Keystone 3-2478  
EL PASO . . . Edison 2-8168  
FORT WORTH . . . Garfield 3-0330  
HARLINGEN . . . Capitol 7-0141  
HOUSTON . . . Porter 5786  
LUBBOCK . . . Webster 3-2478  
LUFKIN—Marly's . . . Webster 3-2478  
ODESSA—Odessa Tire & Supply Co. . . Federal 7-8378  
ORANGE . . . Tuxedo 3-9321  
PORT ARTHUR . . . YU 3-4567  
SAN ANTONIO . . . Capitol 7-7278  
WICHITA FALLS . . . 322-1122

**UTAH**  
PROVO . . . Franklin 3-8715  
SALT LAKE CITY . . . Empire 4-7858

**VERMONT**  
BURLINGTON . . . University 2-3901  
RUTLAND—Abel's Tire Corp. . . Prospect 3-3700

**VIRGINIA**  
FRONT ROYAL—Board Tire & Battery Co. . . 277  
NEWPORT NEWS . . . 6-1329  
NORFOLK . . . Madison 2-3287  
PORTSMOUTH . . . Export 7-4673  
RICHMOND . . . Elgin 5-3286  
ROANOKE . . . Diamond 6-3241  
STAUNTON . . . 5-3210  
WINCHESTER . . . Mohawk 2-0381

**WASHINGTON**  
SEATTLE . . . Elliott 8638  
SPOKANE . . . Main 4-5271

**WEST VIRGINIA**  
CHARLESTON . . . Dickens 6-0431  
HUNTINGTON—Stettler Tire Co. . . Jackson 3-0187  
WHEELING . . . Cedar 2-8860

**WISCONSIN**  
LA CROSSE . . . 4-5085  
MADISON . . . Alpine 5-4592  
MANITOWOC . . . Murray 4-4712  
MILWAUKEE . . . Division 4-6286  
MILWAUKEE . . . Mitchell 4-5640  
WAUKESHA . . . Liberty 2-6675

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701

**WYOMING**  
CASPER—Wyoming Tire Co. . . 3-8701



**Smileage!**

**tires and service**

For more facts, use Request Card at page 18 and circle No. 229



A Wagnermobile front-end loader with 3/4-yard bucket makes a 30-foot lift to charge the 3-compartment aggregate bin of the Engineered Equipment batch plant.

after a pour. The girders, which were covered with a double layer of plastic and canvas, were kept at a temperature of not more than 140 degrees for about 36 hours to gain a 4,500-pound break. Live steam jetted up through the forms from pipes lying alongside the girders.

#### Tensioning

After the 4,500-pound break, the tendons were stretched from about 5 to 6 inches in a predetermined order. The hydraulic jack tensioned four of

the tendons, individually, from one end of the girder, and the remaining five from the opposite end. The jack pushed against a steel ring that was threaded over the end wires. Wedges on the side of the jack gripped the individual wires.

When the wires had been stretched, a smaller ram in the jack shoved home the male member of the cone wedge to hold the tension on the wires. Final tension was 124,900 psi. After the wires were pulled, a non-shrinking grout was pumped at 100 pounds pressure through the 3/8-inch-diameter hole in the cone wedge.

#### Erection

Moving the 40-ton girders from the casting yard to the tops of the piers was no small job. The girders had to

be eased down the steep slope of the approach fill to the area between the twin bridges.

When a girder was ready to be handled, the forward end was set on an eight-wheel dolly pulled by a tractor. The rear end was held by a 40-ton crane. After the crane and tractor maneuvered the girder into position, another crane was moved in to help the first make the lift to the tops of the piers.

#### Personnel

For the joint venture, J. C. "Sag" Wolcott is the superintendent and Clarence "Huck" Meis the foreman in charge of the girder crew. John Pearson is resident engineer for the Iowa State Highway Commission. Inspectors on the job are Bob Sandy and Bill Ellingson.

THE END

## ECONOMY...

through Testing, Research and Quality Control with Accuracy, Speed and Convenience on the Test Location



Interior view showing ample work space for technicians and easy access to apparatus.

## MOBILE TESTING LABORATORIES

TRUCK AND TRAILER LABORATORIES COMPLETELY EQUIPPED FOR . . .

Highway Departments • Consulting Engineers • Testing Laboratories • Municipalities • Counties • States  
Governmental Agencies • Research Groups and Industry

**SOILTEST**  
Incorporated

EASTERN OFFICE: 40 EAST 42ND STREET  
NEW YORK 17, NEW YORK • TELEPHONE YUKON 6-7383

4711 WEST NORTH AVENUE • CHICAGO 39, ILLINOIS • U.S.A.

Telephone SPaulding 2-6400 • Cable Soiltest Chicago • Teletype CG-3167

For more facts, use Request Card at page 18 and circle No. 230



Write Today for a New Sixteen Page Brochure which fully describes all features of these Mobile Laboratories.

### Bituminous paver depicted in new film

"New Concept for Paving", released by Iowa Mfg. Co., Cedar Rapids, Iowa, presents a new approach to the problem of laying acceptable bituminous mat at high speeds. The 24-minute sound and color film points up the importance of improvements in bituminous-paver design.

Close-up views of actual paver construction in the factory show in detail many of the machine's design features, and how these features are applied in the field.

The movie is designed to be shown to contractors; highway engineers and departments; federal, state, and county highway associations; civic groups; chambers of commerce; schools; or any other groups interested in promoting good roads. The company will lend copies of the film to these groups.

### Clark plant to make all-weather cabs

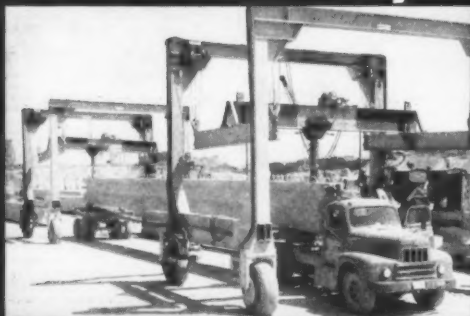
Clark Equipment Co.'s plant at Miller St., Benton Harbor, Mich., will fabricate all-weather cabs for earth-moving and material-handling equipment. Main frame welding and final assembly of Ross straddle carriers were done at this plant before the Ross Division moved to Battle Creek, Mich.

The cabs will be mounted on several Industrial Truck Division products—fork-lift trucks, towing tractors, and straddle carriers; and on Construction Machinery Division tractor shovels, scrapers, dozers, loggers, and excavator cranes. The Miller Street plant is also making combination overhead-guard cabs for some units.

### Armco Drainage promotes

John R. Hursh has been named chief engineer of the products engineering staff of Armco Drainage & Metal Products, Inc., subsidiary of Armco Steel Corp., Middletown, Ohio. Hursh succeeds George E. Shafer, who has retired as vice president in charge of engineering. Paul Buker has been appointed supervising product engineer in charge of all building design.

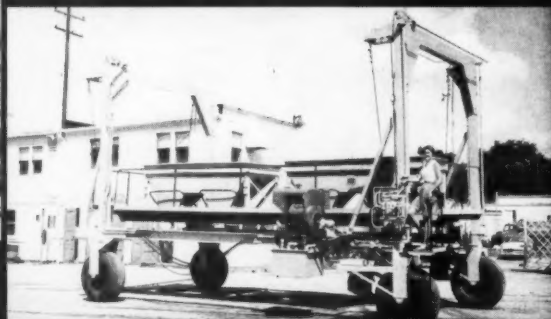
## Travelift\*



Travelift offers the fastest, safest method of loading girders.

\* Equip your plant with the most modern and versatile equipment available. Use Travelift to pull strand, set forms, pour forms, clear beds and store finished product.

A new concept in materials handling problems used by most prestressed plants in the Midwest.



Travelift can be custom built to meet your existing plant requirements.

For complete information, write to Travelift & Engineering, Inc. Sturgeon Bay, Wisconsin.

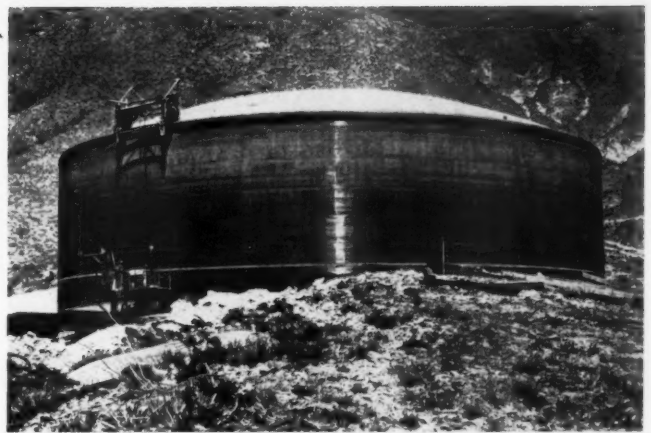
Name .....

Address .....  
City State

For more facts, use Request Card at page 18 and circle No. 231



FINAL PRESTRESSING is under way on the second of two 2-million-gallon water tanks for the Public Service Board, City and County of El Paso, Texas. The 104-foot-diameter 31½-foot-high tanks were designed and prestressed by The Preload Co., Inc., New York City. Robert E. McKee, Inc., El Paso, is general contractor on the project, which will be completed this month.



## South American highway mapped 3,000 miles away

The Syosset, N. Y., engineering firm of Lockwood, Kessler & Bartlett is mapping a 250-mile highway for a country 3,000 miles away. The highway will cross rugged and remote mountain terrain still in the pack-mule era as far as direct overland travel is concerned. Located in Colombia, South America, the highway will run southeast from the major industrial center of Medellin to La Dorada, a port city on the Magdalena River, and there it will connect with another projected road to Bogota, the capital.

The engineering firm never considered plotting the road by conventional methods. A photogrammetry crew spent several weeks taking pictures of the area, and since the equipment for the mapping work could not be duplicated in South America, the photographs were brought to the home office.

Here, aerial photography experts matched up dozens of pictures and mounted them on a long board. These photos gave a complete scale view of every hill, valley, and stream in the area. Then, with the help of stereoplotters, technicians traced "along the ground" of the photographs and constructed topographical maps.

Using the photos and maps, the engineers are laying out the highway. They can tell, for example, whether or not to deflect the road a few miles to take advantage of a natural grade or mountain pass, or where it will be most feasible to bridge a stream.

But even more important, the firm can use one surveying expedition to chart alternate routes. Lockwood, Kessler & Bartlett engineers have already sketched out several possible routes swinging to the north and to the south of Medellin.

## C. S. Johnson changes its sales personnel

The C. S. Johnson Co., subsidiary of Koehring Co., Champaign, Ill., has placed Harold E. Buckler in charge of all sales for the company. Buckler, who is now located in the home office, was sales manager of Johnson's Western Division at Stockton, Calif. He is succeeding in his former post by Jack D. Shoemaker.

A. K. Downs will devote considerable time to an expanded sales program dealing primarily with large automatic concrete plants and special plant installations.



Flick of a switch spreads capacity load of clay and loam topsoil in 15 sec. at a subdivision job near Washington, D.C. "On short hauls, my 2 D 'Pulls will outmaneuver and outperform larger machines," says Owner R. A. Hammett.

## How R. A. Hammett makes small-yardage jobs yield consistent profits

**R. A. Hammett Excavating Co.** of Washington, D.C., specializes in earthmoving for new housing developments. Since they make their profits from a volume of small-yardage jobs — rather than a volume of yardage on a small number of big jobs — the firm uses small work teams of fast high-production machines.

In this highly competitive field... where speed, maneuverability, mobility and work capacity count heavily... the LeTourneau-Westinghouse roadable D Tournapull® has found a permanent place.

On a recent, typical job, Hammett contracted to level and grade streets over the new 25-acre Livingston Park Subdivision in Washington. The material to be worked was loam topsoil over an extremely hard clay. Unfortunately he started work on this job in bad weather.

**Load in water-soaked area**  
During the course of the job, a series of heavy downpours soaked the area, leaving 2' of water in some low spots. Yet, within 4 hrs. after

the final rain stopped, the D 'Pull\* was back on the job.

Teamed with a medium-size crawler-dozer and a rubber-tired front-end loader, the "D" handled the load-haul-spread dirt to fill in low spots around a recently-completed office building. Push-loaded by the crawler-dozer on the high spots, the 9-yd. D 'Pull moved the tough material to fill sections bordering the building. Between push-loading passes, the dozer cleaned out water and muck from low spots on the work site. This speeded cycles.

The "D" boiled in big loads in an average 54 sec. The 'Pull pioneered its own haul route over 550' of wet ground. Haul, mostly in 2nd gear, averaged 1 min., 42 sec.

### Backs onto fill to spread

On the fill, operator found it easier to back "D" in and spread on the way out... rather than to attempt to spread going in and turn-around on the soggy fill. Load was discharged on a 30' strip in 15 sec. Return was made over a shorter 460' route at an average speed of 6.8 mph.

Since completion of the Livingston Park Subdivision job, Mr. Hammett has purchased another "D" which teams with the older machine on medium-size as well as small contracts. Both are kept busy.

### Hit-and-run specialist

If you face the same profit problem as Hammett Excavating Co., it will pay you to investigate the "work-and-run" LeTourneau-Westinghouse D Tournapull. Here is a speedy, roadable-without-permit scraper of good self-load or push-load capacity for hit-and-run assignments.



Push-loaded by crawler-dozer, 9-yd. "D" boils in a good load fast in 100'. Versatile D 'Pull can be push-loaded by any type of tractor or grader, or can self-load profitably.

\*Trademark DP-1691-DCJ-1



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

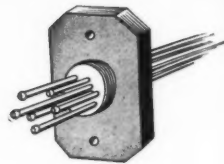
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 232



Workmen excavate trenches for the longitudinal stiffeners of one of the new casting beds at the Trenton, N. J., prestressing plant of Brann & Stuart Co. The additional beds will make it possible for the firm to handle components with draped pretensioning strands.



## Contractor's prestressing work grows into a company division

by ANTHONY N. MAVROUDIS, field editor

After examining the potential market and many prestressing yards for a few years, Brann & Stuart Co., Trenton, N. J., went into prestressing in a big, expensive, and confident way.

This was the gist of a feature on this firm's plunge into prestressing last year. (See "Contractor Turns Producer, Now Makes Prestressed Components", C&E, Sept., 1957, pg. 50.) Since then, Brann & Stuart's prestressing operations have grown beyond expectations, and the firm is now planning a further expansion—again in a big, expensive, and confident way.

### Form new division

The firm is sponsoring the expansion plans of Atlantic Prestressed Concrete Co., a new division of the company.

The Warner Co., which has been supplying the ready-mix concrete for Brann & Stuart's prestressing plant in Trenton, has an interest in the new company. This setup has advantages that work both ways: the prestressing plant to be built will be assured of a nearby source of concrete; and Warner will be assured of a constant market throughout the year. This will smooth out the wide seasonal fluctuation which Warner experiences in producing only for construction projects. A prestressed-concrete plant can almost guarantee the use of a fixed quantity of concrete daily, regardless of weather and other factors that have an effect on construction jobs.

### Plants start production

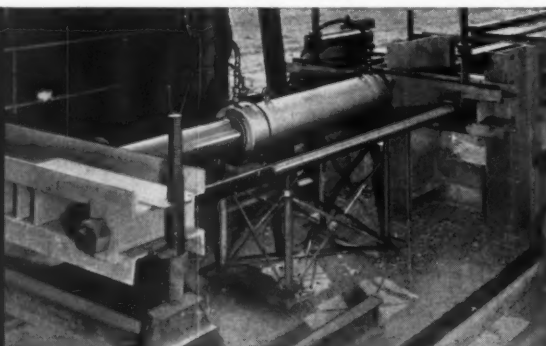
This month, Atlantic Prestressed is ready to start full-scale production at two locations—Trenton, N. J., and New Castle, Del. New beds have been set up at the existing plant site in Trenton; the New Castle plant, on a new location, has similar casting beds.

The new company retained consulting engineer Ross H. Bryan, Nashville, Tenn., to design the new beds, which make it possible for the firm to handle draped pretensioning strands. There are three rows per bed, and both beds have an effective length of 250 feet.

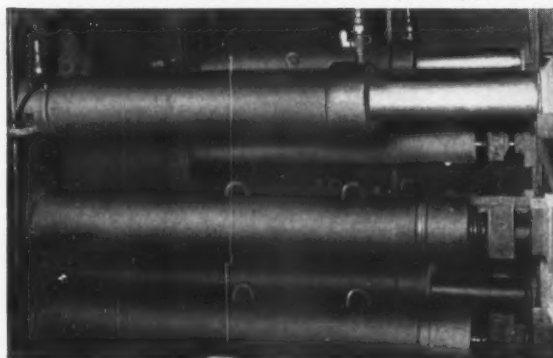
Over-all dimensions of the new beds are 282 feet in length and 24 feet in width. The casting bed slab, between the end abutments, is strengthened by three reinforced-concrete longitudi-



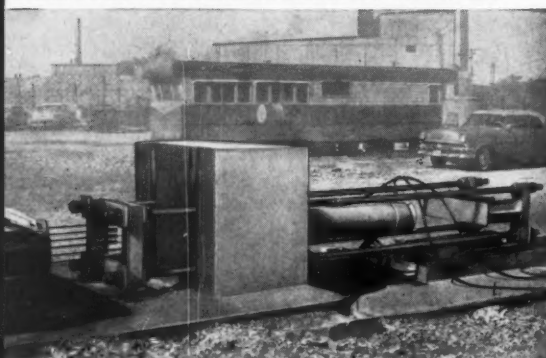
NORTH CAROLINA—North Carolina Products Corp., Raleigh, N. C.



CALIFORNIA—Rockwin Prestress Concrete Co., Norwalk, Calif.



PENNSYLVANIA—Schuylkill Products, Inc., Cressona, Pa.



NEW YORK—Frontier Dolomite Concrete Products, Lockport, N. Y.

## Rodgers HYDRAULIC JACKING UNITS Best On Prestressing Jobs, Everywhere!

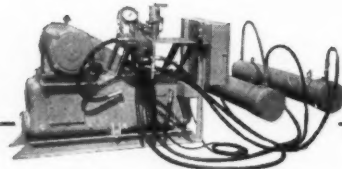
RODGERS Hydraulic Jacking Units used singly or in multiples of two, four or more provide "controlled pretensioning and detensioning" of steel strands.

Regardless of size or type of bed design—whether the jacking carriage is of rods with locking nuts or guided structural steel abutments with locking screws—Rodgers Jacks assure smooth, positive action. Accurate control of pump and jacks provides uniform pretensioning and detensioning to conform with exacting state and municipal specifications.

Prestressing units with any number of jacks are available with hand operated or power driven hydraulic pumps in capacities from 50 to 600 tons. Double-acting jacks are offered with ram travels of 30 or 48 inches.

# Rodgers Hydraulic Inc.

7451 Walker Street • Minneapolis 26, Minnesota



For complete information  
on Prestressing Jacks and Pumps  
write for Rodgers Catalog 332 A



EXPORT DIVISION

205 WEST WACKER DRIVE

CHICAGO 6, ILLINOIS, U. S. A.

For more facts, use Request Card at page 18 and circle No. 233



**Beds for stressing draped strands are built at old and new yards; production starts this month as plans are made for further expansion**

dinal stiffeners poured with the 8-inch-thick slab. These stiffeners, spaced 7½ feet on centers, are 1½ feet thick and extend 2 feet 4 inches below the slab.

The main purpose of the slab stiffeners is to hold down the deflector rails, which are used to depress pretensioning strands, and to provide the rigidity necessary to resist the tremendous upward forces encountered when draped strands are pretensioned. No. 5 stirrup-shaped anchors, spaced on 12-inch centers and passed through the deflector rails, tie the deflector rails into the slab-stiffening girders. There are three rails per bed—one for each row.

The casting bed slab is supported at each end by reinforced-concrete anchorages which are 6 feet deep, 24 feet wide, and 30 feet long. Each anchorage has four monolithically poured reinforced-concrete anchor columns, 6 feet high and 6 feet long, set about 10 feet in from the end of the casting bed. The two exterior columns are 2 feet wide and the interior columns 2½ feet wide. One set of columns supports the live or jacking end of the casting bed while the dead or fixed end is supported by columns at the opposite side of the bed.

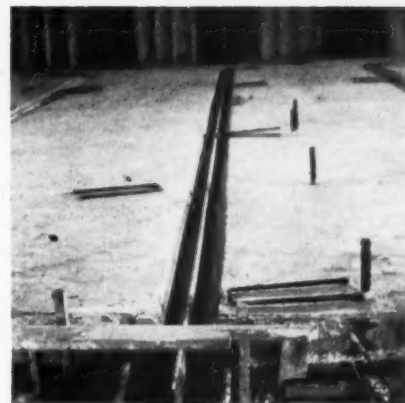
Atlantic Prestressed decided to build this latest type of casting bed at New Castle and Trenton because of the many advantages of using draped pretensioning strands. The beds are versatile, because each can be used as a conventional universal casting bed with only straight strands.

The biggest advantage of draped-strand girders is that they have an increased load-carrying capacity without an increase in the girder section. Another advantage: draped-strand girders or beams can be used in rigid frame construction, something not possible with conventional stressed members.

Basically, the casting bed at New Castle is the same in design as the one at Trenton. But the New Castle plant will have two 25-ton-capacity Travelifts straddling the 24-foot slab to handle placement of forms and the lifting and stockpiling of completed prestressed-concrete components. Equipped with rubber tires, and having a 26-foot horizontal clearance, the rigs will ride two 3-foot-wide concrete aprons along the edges of the slab. They will be able

(Continued on next page, Col. 4)

Deflector rails to hold down depressed strands during stressing operations are embedded in a slab. Each rail runs above longitudinal stiffeners which resist the upward forces set up during stressing.



## Mobile dozer saves time and money

**"RUNS" > ... to stockpile ... to asphalt plant ... to sand pit ... to dirtmoving jobs**



Banks Construction Co., Charleston Heights, S.C., operates an asphalt plant at Charleston, as a part of its wide-spread roadbuilding and dirtmoving business.

Contractor needed a powerful dozer to push big blade-loads of stone, sand, and screenings into a hopper feeding the plant... to maintain widely separated stockpiles of aggregate... to spot railroad cars... to push-load Tournapull® scrapers in the company's sand pit.

The tractor was not needed full-time at the pit and plant, so officials saw an additional advantage in a high-speed dozer that could drive via highways to assist on local dirtmoving jobs... then quickly return to its regular chores.

### Cuts non-production travel time

A 210 hp rubber-tired LeTourneau-Westinghouse Tournatractor® was the answer. This mobile dozer delivers as much push-power as a comparable crawler, at faster dozing speeds... yet moves swiftly under its own power to any job in the Charleston area, within half an hour. Because it "runs" between assignments, big Tournatractor can be economically used on small, scattered jobs that take only an hour or so.

By traveling fast, this tractor reduces time ordinarily lost in crawling or flat-bed haul between jobs. Tournatractor also saves time for the other machinery dependent on it. There's little waiting for dozer service, so output of asphalt plant and scrapers is high.

### Works fast... boosts output

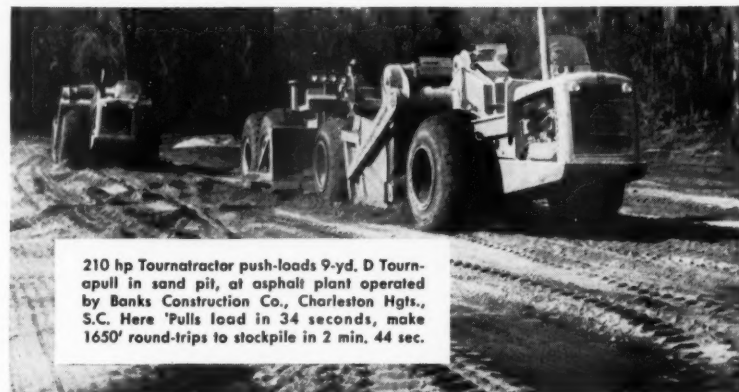
Tournatractor saves money for Banks Construction Co. by cutting costs of many operations. It keeps materials stockpiled high for easy access and fast loading... keeps hopper at plant continuously supplied, for non-stop production. Dozer moves rail cars promptly, as needed. And at the sand pit, it push-loads 9-yd. Tournapulls... heaps full payloads in an average of 34 seconds.

Banks saves on capital investment, too. If a less-mobile tractor were used, contractor would have to invest more money in a 2nd tractor, to do some of his outside dirt work that is now handled by work-and-run Tournatractor.

Appraising the over-all efficiency of LeTourneau-Westinghouse equipment in his fleet, Mr. G. S. Long, Vice President and General Superintendent, reports, "Our Tournatractor and D 'Pulls' are very well adapted to our kind of operation. We've found they give us excellent performance, and produce well, even in the sandy conditions that exist in this area."

For heavy dozing push-power, plus speed and mobility that save time and money, check 210 hp Tournatractor. Ask us to show you how this work-and-run tractor can help boost output of your entire dirtmoving fleet. Call or write us.

\*Trademark CTDP-1761-DCJ-1



210 hp Tournatractor push-loads 9-yd. D Tournapull in sand pit, at asphalt plant operated by Banks Construction Co., Charleston Hgts., S.C. Here 'Pulls' load in 34 seconds, make 1650' round-trips to stockpile in 2 min. 44 sec.



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 234



STRUCTURAL TILE for a new aluminum plant in Hannibal, Ohio, is picked up by an American Econmobile Model 600, one of five on the project. F. H. McGraw & Co., New York City, is the contractor on the building for the Olin Mathieson Chemical Corp.



This Hydrocrane uses its precision control to spot a 1/2-yd. bucket on a pouring job at Fond du Lac, Wisconsin.

**To give you a money-makin' edge...**

## Hydrocrane's Inch-Splittin' Accuracy Speeds Up Pouring and Placing

You can move a concrete bucket or prestressed slab an inch as easy as you move it a foot—lift a full bucket as easy as you lift a pound. Hydrocrane's all-hydraulic "on-the-button" controls give you quick, accurate pours and placements—a money-makin' edge for you.

Four hydraulic outriggers set in seconds; form a stable, level work base. With this sta-

bility you can take full advantage of the Hydrocrane's lifting capacity—even on over-the-side lifts.

Your Bucyrus-Erie distributor is ready to show you the money-makin' edge in operating speed and precision control that belongs to the 12-ton H-5 . . . and 5-ton H-3 Hydrocranes.

243H53

### Other Hydrocrane money-makin' edges

- low-cost new or used standard commercial motor truck mounting
- short tail swing for close-quarter jobs
- telescoping boom reaches in and out, over and under
- quick setups and knock-downs, open road speeds up to 50 mph



**Over 50% of Hydrocranes Sold Last Year Were Repeat Orders**

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN  
For more facts, use Request Card at page 18 and circle No. 235

### Stone & Webster forms subsidiary in Holland

A Netherlands subsidiary, Stone & Webster Engineering N. V., has been established by Stone & Webster Engineering Corp., Boston, Mass. The new subsidiary, headquartered in The Hague, will provide a wide range of engineering, procurement, and construction services to clients in western Europe.

The firm has altered the names of its affiliates in Britain, France, and Australia. In Britain, E. B. Badger & Sons, Ltd., which merged with Stone & Webster in 1951, becomes Stone & Webster Engineering Ltd. The French subsidiary, formerly known as Etablissements Badger, S. A., is now Stone & Webster Engineering S. A. Both of these subsidiaries are active in engineering and construction for the petroleum and petrochemical industries throughout western Europe.

The Australian subsidiary, E. B. Badger & Sons Pty. Ltd., is now known as Stone & Webster Pty., Ltd.

### Bendix names chief for development group

Dr. Harry D. Huskey is coordinating the activities of the newly formed Advanced Programming Development Group for the Bendix Computer Division of Bendix Aviation Corp. in Berkeley, Calif. The group is currently engaged in developing compilers for the G-15D general-purpose computer system.

Dr. Huskey, an associate professor in electrical engineering and mathematics at the University of California at Berkeley, is one of the foremost pioneers in the field of electronic computers and has served as consultant to Bendix since 1953.

(Continued from preceding page)

to run onto and off the beds as operations demand. The Travelift aprons carry steam, water, and electric lines.

The New Castle bed is 282 feet long and has an effective working length of 250 feet for each of its three casting rows. The abutments required about 220 cubic yards of concrete and are heavily reinforced with 1½ and 2-inch-diameter reinforcing bars. These are tied into the steel of the longitudinal stiffeners in order to tie the abutments and casting slab together structurally.

#### Confidence in future

The growth of Atlantic Prestressed stops here, but only for the present. Plans are already under way for expansion throughout many of the surrounding states. The use of prestressed-concrete construction is spreading, and the firm—confident in the growth of prestressed-concrete construction—feels that as more and more engineers become familiar with prestressed design and its capabilities, the market will expand. Next year's progress report on this company still remains to be written, but even now it looks bright.

THE END

CONTRACTORS AND ENGINEERS



## Soil stabilization, flexible pavement studies

The Highway Research Board, 2101 Constitution Ave., Washington 25, D. C., has issued two new bulletins—"Soil Stabilization Studies, 1957", Bulletin 183, and "Flexible Pavement Studies and Georgia Design Practice", Bulletin 177.

Bulletin 183, containing five papers on soil stabilization by means of additives, describes the results obtained on Ohio's secondary roads, the methods and results of a study on the effect of density on the strength of lime-fly ash stabilized soil, and the strength characteristics of soil-aggregate mixtures. The last two papers deal with

the results of the use of dust from expanded shale as an admixture in lime stabilization, and the improvement of strength of soil-cement with additives. This bulletin is priced at \$1.

A load-deflection study of selected high-type flexible pavement in Maryland is reported in Bulletin 177. This bulletin also contains data on flexible pavement design as currently practiced in Georgia, and an evaluation of pavement systems of the WASHO road test by layered system methods. The price of this bulletin is \$1.20.

Both bulletins may be purchased from HRB headquarters.

## Pavements and traffic topic of HRB bulletins

Three bulletins have been issued by the Highway Research Board: "Development of New Non-Skid Road Surface Treatment", Bulletin 184; "Tests of Energy-Absorbing Traffic Barriers", Bulletin 185; and "Vehicle Performance as Affected by Pavement Edge Lines and Traffic Signals", Bulletin 178.

Bulletin 184 describes development and laboratory and field testing of a new skid-resistant roadway surface treatment based on thermosetting epoxy resins, and the service testing of the same surface treatment which was applied to the concrete apron and toll booth area at the Milford Toll Station on Connecticut's Wilbur Cross Parkway. Price of the bulletin is 50 cents.

Crash barrier tests on multiflora rose hedges are described in Bulletin 185. This bulletin also describes the development and testing of an energy-absorbing barrier for highways. The barrier consists of a series of corrugated concrete slabs extending about 2 feet above the road surface and arranged in a row in the center of the median strip. This bulletin costs 60 cents.

Platoon movement of traffic from an isolated signalized intersection, and pavement edge lines on 24-foot surfaces in Louisiana are reported in Bulletin 178, which is priced at 60 cents.

All three bulletins may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

## Australian firm to make Wisconsin Motor engines

An agreement, which will increase production of Wisconsin air-cooled engines in Australia, has been signed between Wisconsin Motor Corp., Milwaukee, and Ronaldson Bros. & Tipsett, Ltd., Ballarat, Victoria. Models produced by the Australian firm will incorporate all of the heavy-duty features of design, making them identical to those Wisconsin engines produced by the Milwaukee firm.

For the past five years, the Australian firm has been producing two multi-cylinder models of the Wisconsin engine line. It recently placed a single-cylinder model of the line in production.



## Almost like moving dirt on an endless belt...



## Grader smooths road for day-long 10 mph average scraper cycle-speed... including load, haul, spread and delays

Lincoln Clearing Co., Inc., Baltimore, Md. has found that one of the surest ways to get steady, hour-after-hour output of scraper dirt, is to keep haul roads smooth, wide, flat, and well drained. Lincoln keeps its scrapers moving with the regularity of buckets on an endless belt!

Good example is the 500,000-yd., E. Baltimore housing site-improvement job for Welsh Construction Co., Baltimore. On this work, 2 LeTourneau-Westinghouse, 18-yd. C Tournapulls® and 2 other self-propelled scrapers were used. Much of the dirt to be moved lay on one hill. The

high ground was cut, and moved 0.8 mile to a low spot, preparing both the hillside and low area for the construction of houses.

## Boost scraper-dirt output to 65-70 loads per machine, each day

One 123 hp Adams\* 550 grader was assigned to maintain the off-highway haul route. The Adams cut a smooth surface, 2 scrapers wide, so 'Pulls\* could pass on haul and return without slowing down. Side-hill paths were flattened, and low spots filled. Entrance and exit from cut and fill were bladed often, so scrap-



Adams 550 grader teams-up with two 18-yd. Tournapulls and 2 other self-propelled scrapers, on 500,000-yd. housing site development job for Lincoln Clearing Co., Baltimore, Md. The 123 hp grader kept 0.8 mile haul road borrow, and fill paths smooth, so dirtmovers could speedily haul 65 to 70 big, heaping payloads per scraper, per 10-hr. day.

ers could roll in and out without pausing to shift gears. And "550" continually patrolled the 0.8 mile route, smoothing, leveling, and crowning for quick run-off of rain.

The results? Lincoln Clearing Co. records show a steady production of 65 to 70 loads per scraper, per 10-hr. day. That figures-out to better than a 10 mph all-day production pace. This includes waiting for pusher, loading, hauling, spreading, minor delays, time-out for conferences with grade foreman, etc. With scrapers "highballing" continuously, it was almost like moving dirt on a non-stop conveyor belt, running at 10 mph!

## Ask for an Adams demonstration

You'll find that dollar-for-dollar, Adams graders give you more work-power... that they smooth more haul road, blade more fill, dig more ditch per-hour than any comparable graders. 7 models—60 to 190 hp—with your choice of GM or Cummins engine on 6 larger sizes. Write or call us for full information.

\*Trademark GCP-1783-DCJ-

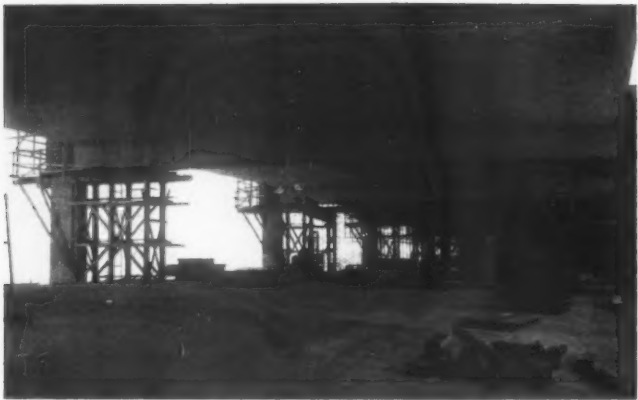


**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

A Subsidiary of Westinghouse Air Brake Company

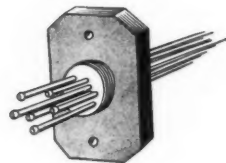
Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 236



The long span of the prestressed pier caps supporting the box girders of the second deck of the Embarcadero Freeway structure in San Francisco are visible from the lower deck. These long caps span up to 88 feet.

## Integral pier caps are post-tensioned



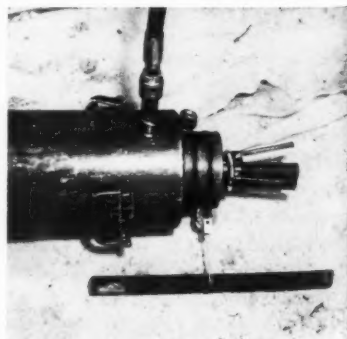
The prestressing of thirteen of the longest pier caps on the Embarcadero Freeway structure in San Francisco made it possible to span up to 88 feet clear over the six-lane lower-deck roadway. The pier caps were cast in place integral with the columns and the box-girder deck, and were then post-tensioned.

Using the Stressrods system, Rods, Inc., Berkeley, Calif., subcontracted the furnishing and stressing of the steel from general contractor Charles L. Harney, Inc., San Francisco.

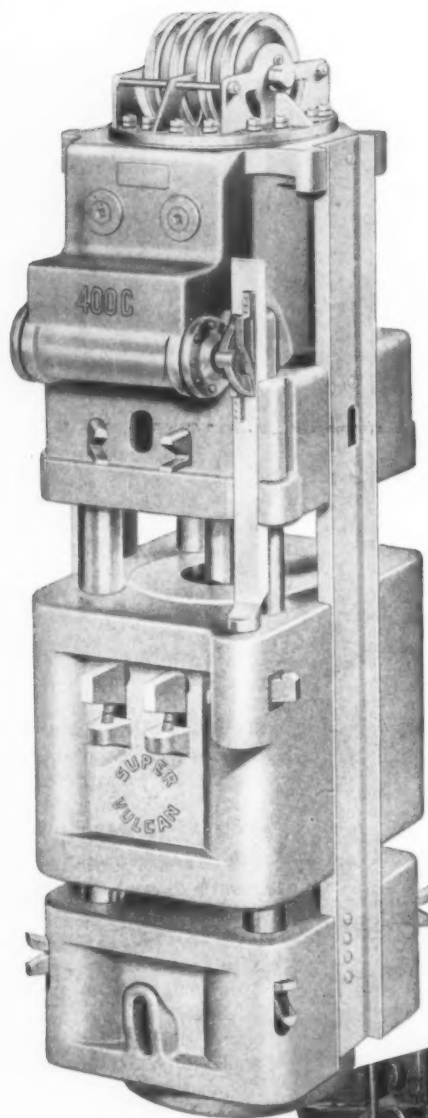
Stressrods tendons of 1½-inch diameter were used on the job, with an ultimate strength of 165,000 to 177,000 psi and a yield strength of 130,000 to 140,000 psi. In the final operation the rods were available in maximum lengths of 77 feet; any additional length was obtained by using the Howlett Stressgrip coupling device to couple them together into desired lengths.

The Howlett Stressgrip coupling and Howlett wedge nut, which provides the end anchorage, consist of two threaded sleeves. Tapered threads between the two sleeves provide a wedge effect while specially designed teeth on the inner surface of the inner sleeve grip the rods firmly, yet cause no reduction in the cross-sectional area of the rods.

The big pier caps, which are formed and poured integral with the columns and with the box-girder deck, are 4 feet wide and 8.5 to 9.5 feet deep. This leaves them projecting 4 or 5 feet below the bottom of the 4.5-foot-deep deck.



A mock-up of the measuring device. The pointer on the head of the jack is attached to a small horseshoe magnet. A mark is made on an adjacent rod before stressing starts. The distance between this mark and the pointer shows the amount of elongation.



Every step in the manufacture of VULCAN Pile Drivers and Pile Extractors is carefully checked.

## QUALITY in VULCAN Pile Drivers is no accident

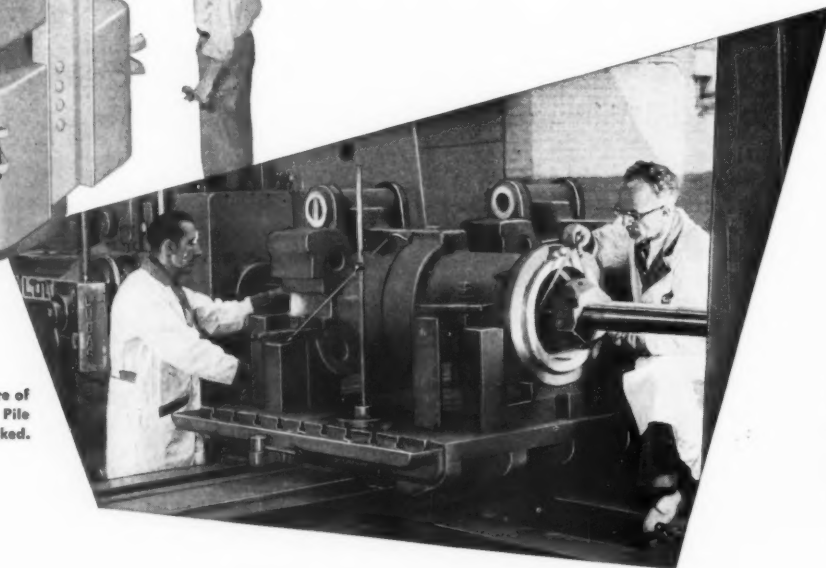
*It is a CREED that extends through  
every step of design and manufacture!*

There is so much more to pile driving hammers than meets the eye . . . particularly when these hammers are made by VULCAN!

For here at Vulcan Iron Works . . . a 105 year old company with a rich heritage in the manufacture of pile driving equipment . . . *quality is a way of life.*

Skilled craftsmen equipped with the finest and most modern tools, plus precision inspection and quality control, all combine to produce the very finest pile driving equipment in the world!

On your next job specify VULCAN with confidence for the *quality you can trust!*



Manufacturers of Pile Driving Hammers and Piling Extractors Since 1852

**VULCAN** IRON WORKS INC. 327 North Bell Avenue, Chicago 12, Illinois

For more facts, use Request Card at page 18 and circle No. 237

CONTRACTORS AND ENGINEERS



**Prestressing of big pier caps on freeway structure provides long clear spans for six-lane lower roadway**

After the rods are stressed, the space inside the sheaths is grouted. The grouting nozzle fits into the hole in the locking nut and is held in place with a C-clamp arrangement. The hose from the grout pump is attached by the quick coupling in the workman's right hand.



**Placing the steel**

From 37 to 56 of the Stressrods, encased in U-100 Universal Metal Hose sheaths, were placed in the caps together with conventional stirrups and temperature reinforcing. The rods were placed in a parabolic pattern, the steel concentrated near the bottom of the section at the center of the span and distributed over the cross section at the ends.

Forming and concrete placement for the prestressed caps were the same as for the rest of the structure, but a richer mix—7½ sacks per cubic yard—was used. Specifications provide for curing until a strength of 3,000 psi is attained for the conventional members of the structure while the prestressed members must attain 4,500 pounds before post-tensioning. This created no problems, since the richer concrete was usually ready for stressing in 7 days while the rest of the structure generally had to cure 10 days before stripping could begin. This left plenty of time for the post-tensioning operation and did not interfere with the general contractor's stripping schedule.

**Post-tensioning**

The post-tensioning crew first cut the protruding ends of the metal sheaths flush with the concrete of the ends of the caps. They next placed 13⁄8-inch steel bearing plates over the ends of the rods and against the concrete. The Howlett wedge nuts were slipped over the ends of the rods and tightened by hand.

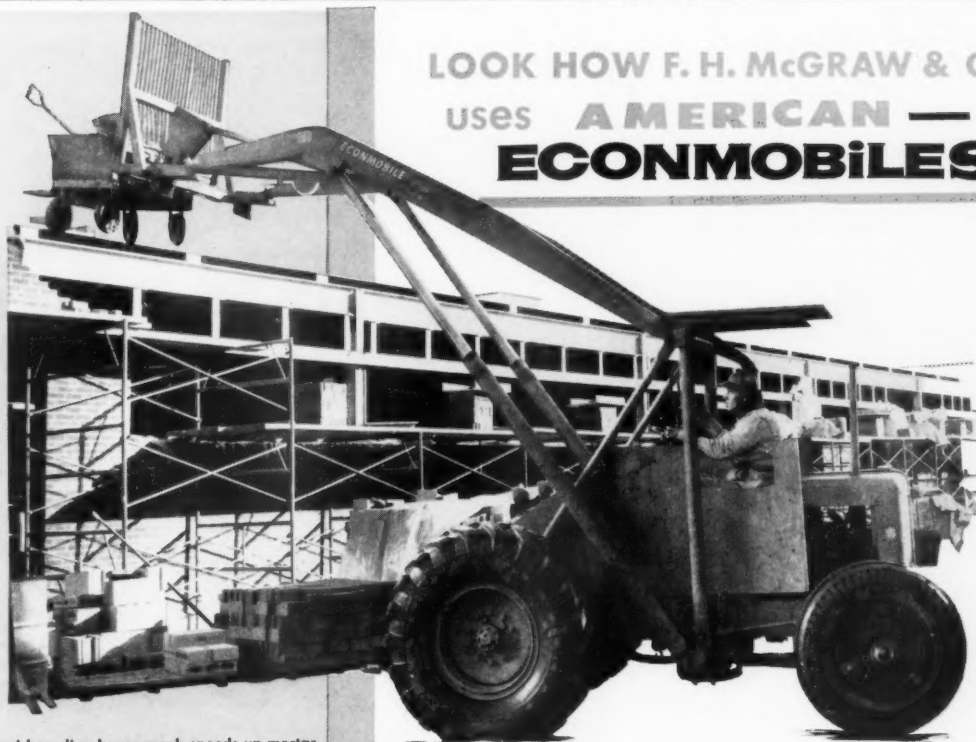
A jack stand and wedge setting pin were placed, and the 100-ton Simplex jacks slipped over both ends of one of the rods. These are double-acting hydraulic jacks with a 10-inch stroke. The hydraulic pressure for both jacks was supplied by a Lincoln Ram-Pac unit made by Dozier Mfg. Co., Oakland, Calif. The unit was powered by air from a compressor. Jacking plates and wedge grips locked the jacks to the rod.

The jacks were actuated up to 500 pounds pressure, putting a stress of about 10,000 psi in the rods. This took up any slack and readied the rod for the full stressing operation.

To indicate the amount of the elongation, Rods, Inc., used a very simple but clever device. A fine steel

(Continued on next page)

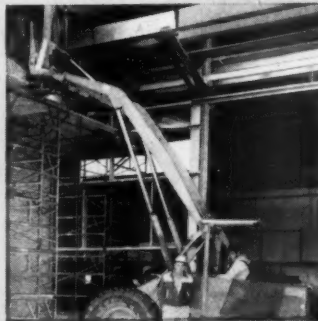
**LOOK HOW F. H. McGRAW & CO. USES AMERICAN — ECONMOBILES**



A real boarding house reach speeds up mortar handling. Econmobiles were delivered to F. H. McGraw & Co. by Linco Supply Co., Pittsburgh, Pa.



Handling dust and fume control ductwork is one of hundreds of jobs for the ECONMOBILE.



Walls go up fast when bricks, blocks and mortar are constantly supplied.

*The* **JACK-of-all-JOBS**  
has the reach, height, mobility, capacity and time saving features to do almost any material handling job.

F. H. McGraw & Company, general contractors for the multi-million dollar Olin-Mathieson aluminum plant at Hannibal, Ohio, use six ECONMOBILES to mechanize their materials handling at the job site, replacing much more expensive machines that require two man operation.

How useful? ECONMOBILES are putting up scaffolding, supplying masons with brick, blocks and mortar, raising everything from forms to pipe, pouring concrete, and doing general clean-up.

The potent combination of reach, height, capacity and mobility makes it possible. The experienced job tested background of hundreds already in use gives you the kind of money saving, non-stop performance you need.

Save? Save just one man 365 days and it pays for an American ECONMOBILE. Ask one of our 90 national distributors.



**AMERICAN ROAD EQUIPMENT CO.**

4201 No. 26th

Omaha, Nebraska

For more facts, use Request Card at page 18 and circle No. 238



The jack stand and wedge setting pin are set. The 1 3/8-inch-thick bearing plates are placed over the 1 1/2-inch-diameter Stressrods, which are in U-100 Universal Metal Hose sheaths. Howlett wedge nuts, placed over the rods, have been tightened by hand.



A Simplex 100-ton double-acting jack with a 10-inch stroke is then set. Similar jacks are placed at each end of a pier cap.



The jacking plate and wedge grip are set to give the jack a firm grip on the rod, and the setup is ready for stressing.

(Continued from preceding page)

pointer about five inches long was attached to a small horseshoe magnet, and the magnet was placed on the side of the jacking plate so that the pointer lay just over one of the adjacent rods. A scratch on the rod indicated the starting point of the elongation; another scratch 2 1/2 inches away indicated the end of the elongation.

When the initial 500 pounds of pressure had been applied and the indicator set in place, the jacking was started again. One jack was operated at a time to stretch the rods to 120,000 psi—an operation which required a gage pressure of 5,600 pounds on the jack. When the desired elongation had been reached, the valve was closed to hold the jack while the other end was stressed. When both ends had been pulled to the desired stress, the locking pin of the wedge nut was driven home to lock in the stress. The jack was then removed. Some 12 to 15 rods were stressed per hour.

The air-operated Dozier Lincoln Ram-Pac unit was made especially for Rods, Inc., for operating these jacks. The Ram-Pac unit is mounted on top of the oil reservoir which is fitted with wheels so that it can be moved easily. Separate lines run from the unit to each jack so that the jacks can be operated separately or together. Valves reverse the flow of the fluid, permitting the double-acting jacks to be returned to the starting position after each stressing.

Coordination of the jacking operation at the two ends was facilitated by the use of special telephones. These had wires strung across the deck to permit workmen at both ends to talk to each other, regardless of the amount of noise in the area.

On these caps, a total resultant working force of 4,820 kips was applied to the rods after allowance for all losses.

#### Grouting

When the stressing of all the rods in the cap was completed, the spaces between the rods and the sheaths were filled with grout. Two grout mixers were set up in tandem so that the grout could flow from the first to



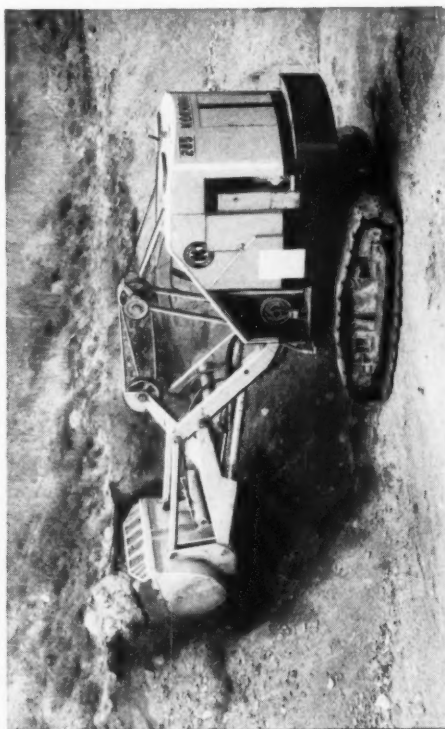


# REVOLUTIONIZES digging...loading

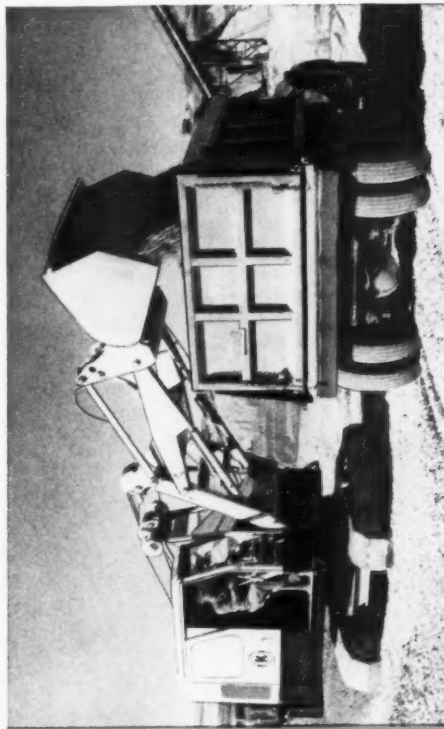
- 1 2-yard loader... full revolving, free-swinging for faster cycles.
- 2 "Stand-still" loading eliminates high maintenance costs of front-end loaders.
- 3 Cuts fuel and servicing cost by moving up to 400 tons per hour with only 70 horsepower.
- 4 7' level clean-up plus more utility because SKOOPER cuts any angle of bank slope.
- 5 Versatile... convertible to use with any excavator attachment.
- 6 Dozens more startling and revolutionary SKOOPER advantages.

Call your Koehring distributor now to find out more and to make an appointment to see SKOOPER at work.

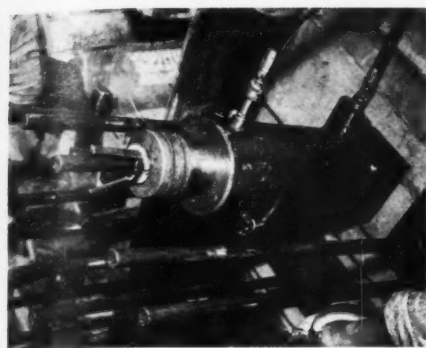
**KOEHRING DIVISION**  
KOEHRING COMPANY  
Milwaukee 16, Wisconsin



SKOOPER'S wide bucket can cut evenly up a sloping bank as well as on an accurate level grade. Crawlers can head into digging or parallel bank.



SKOOPER can load to 9'-11" over side or end of truck, make 90° dig-swing-dump-and-return cycle without travel, cuts number of trucks needed.



The rod is being stressed. A Dozier Lincoln Ram-Pac unit on the oil reservoir supplies hydraulic pressure. A special telephone keeps the crew in touch with men on the opposite end of the pier cap.

The jack is held in the extended position while stress is applied from the opposite end. The locking wedge is then driven home.



the second by gravity. The mix was picked up from the second tank by a Dozier Lincoln Ram-Pac pump. The discharge line from the pump branched into two lines which were valved so that they could be operated independently.

The grouting nipples attached to the wedge nuts on the ends of the rods with a C-clamp arrangement that was quickly placed and removed. The nipples were fitted with quick couplers of the type used on air hoses. A number of these nipples and the two discharge lines from the pump were used, and the grouting job went very quickly. On this job the sleeves were grouted at a rate of about 25 per hour.

The grouting mix consisted of 4½ gallons of water to a sack of Type II cement and two ounces of Plastiment.

After grouting and testing were completed, the excess lengths of rod were burned off, and a concrete cap was cast over the end of the pier.

## Personnel

The job of placing and stressing the 80 tons of high-tensile rod in thirteen pier caps on this job was supervised by Sidney Kemp for Rods, Inc. The resident engineer for the California Division of Highways on the project is D. R. Higgins.

THE END

## Basalt starts service on prestressed units

A new consulting service on the manufacture of plant cast, prestressed-concrete products has been established by Basalt Rock Co., Napa, Calif.

It is designed to aid concrete manufacturers entering this field in avoiding costly mistakes which often accompany such expansions. Basalt Consultants will cover every phase of the business including such basic problems as plant design to satisfy marketing designs of the particular area, and selection of products and shapes to be manufactured.

In addition, the service will supply technical assistance, train key engineering and plant personnel, provide engineering data, test results and make available technical literature with proven use details.

For more facts, use Request Card at page 18 and circle No. 239

KREI

## Proceedings of second prestressing congress

The Cement and Concrete Association of Great Britain has issued "Proceedings of the Second Congress of the Federation Internationale de la Precontrainte (International Prestressing Federation)". The 990-page book, over two and a half years in preparation, treats new developments in prestressed concrete since the First Congress in 1953.

The proceedings include all papers, general reports, discussions, and other congressional communications in the language in which they were presented at the 1955 congress—French, English, or German.

The book covers such topics as the function of grouting and anchorages in the behavior of prestressed ele-

ments; experience and problems concerning the manufacture and use of steel for prestressing; progress of precast, prestressed work in the factory and the assembly, by prestressing on the site, of precast units. It also discusses moment distribution in statically indeterminate prestressed structures beyond the elastic phase; and the influence of plasticity on the strength and instability of thin prestressed shells.

Post-free copies of the book may be obtained by sending a \$15 check payable to the Cement and Concrete Association, and addressed to Federation Internationale de la Precontrainte, Terminal House, Grosvenor Gardens, London, S. W. 1, England.



Concrete pouring for a prestressed Amdek box girder—64 feet long, 3 feet wide, and 33 inches deep—takes place on the huge outdoor casting bed of the Concrete Products Division, Buffalo Crushed Stone Corp., Lancaster, N. Y. The hose connection, outside the casting bed, is part of a vacuum system assuring proper placement of concrete and easy form removal.

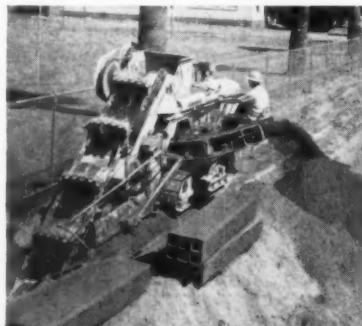


**TRENCH WIDTHS:  
20 TO 32 INCHES**

- maximum digging depth 5'9"
- hydraulically-driven conveyor — belt speeds independent of digging wheel speeds
- 30 digging speeds from 12" to 25 lineal feet per minute
- heavy-duty cast-steel buckets
- double-point "Tap-In" teeth — self-sharpening, reversible
- quick-change gumbo buckets
- retractable bucket-cleaner
- hydraulic wheel-hoist on power-tilt mast
- standard tractor crawlers — 16" grouser-type treads, or 12" flat shoes optional
- choice of gas or diesel power
- gears enclosed in oil; shafts on antifriction bearings

Developed to meet the demand for wide work range in a medium-size machine, Parsons 170 wheel-type Trenchliner digs up to 32 inches wide, at depths to 5¾ feet. With this extra capacity, you get smooth, positive wheel control. Hydraulic power raises and lowers the wheel on vertical mast with fractional-inch accuracy — maintains close grade tolerance on drainage, pipeline, utility trenching — and highway widening. Mast tilts for traveling. Hydraulic control system on conveyor gives belt speeds up to 600 feet per minute — *completely independent of digging wheel speeds*. Belt easily handles maximum yardages from the extra-wide wheel — puts spoil bank well back beyond edge of trench. To suit various digging conditions, the 170 has round or square-bottom buckets with "Tap-In" teeth — solid or tine backs — also, quick-change gumbo buckets. Have Parsons distributor demonstrate what this 170 Trenchliner will do! Call him today.

**10 SIZES!** For any size trench, from small residential service connections to biggest storm sewers, water and gas mains, check Parsons line. There are 10 different models to choose from: 5 wheel-types — digging 12 to 52 inches wide, at depths to 8½ feet. 5 ladder-types — digging 6 to 72 inches wide, at depths to 19 feet. One of the small ladder-type Trenchliners — model 155—shown at right.



Want more facts?

Mail to: PARSONS Company, Newton, Iowa  
Send literature on: 170 155 Trenchliner

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_



**PARSONS TRENCHLINER**

A division of Keckring Company

For more facts, use coupon, or Request Card at page 18 and circle No. 240

## Concrete-pipe producer adds prestressing work

A new venture, which shows promise of being a large part of the business of the Concrete Products Division of Buffalo Crushed Stone Corp., is the manufacture of prestressed-concrete products. This reinforced-concrete-pipe producer has recently opened a \$500,000 plant on a 110-acre site in Lancaster, N. Y., near the Buffalo, N. Y., headquarters of the parent firm. The new plant will serve customers within a 100-mile radius.

On a huge outdoor casting bed, which looks like a narrow-gage railway track, forming, stressing, and concrete pouring operations follow an orderly sequence. Concrete is consolidated with vibrators to assure uniform coverage of all areas and a smooth, even surface.

At the plant, a number of beams can be handled on the same bed with the same cable setup. A vacuum system is employed to assure proper placement of concrete.

## Theory and design data on prestressed concrete

The basic principles of all types of prestressed-concrete structures are contained in Part I of "Prestressed Concrete: Theory and Design", by R. H. Evans and E. W. Bennett. In this section, theoretical principles are established wherever possible, and examples are provided for the student to work out.

Part II deals with the design of simply supported beams and is aimed at bridging the gap between principles and practice. The maximum possible use is made of formulas, tables, and graphs. The last part introduces some of the more specialized types of prestressed structures: composite construction of prestressed and in situ concrete; statically determinate structures; indeterminate structures; liquid-retaining structures; and domes and shells.

The \$10 book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Toll revenues on the New York State Thruway during June amounted to \$743,745.67.



## Concrete research papers in three HRB bulletins

"Prestressed Concrete Pavement Research", Bulletin 179; "Continuously Reinforced Concrete Pavement: Full-Scale and Model Tests", Bulletin 181; and "Instrumentation for Measuring Characteristics of Concrete", Bulletin 176, are available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

French and British procedures in the design of prestressed pavements are reviewed and compared with those used in the United States, in Bulletin 179. This bulletin also describes the design and testing of experimental prestressed-concrete slabs for highway pavements, and describes model studies of prestressed rigid pavements for airfields. This bulletin costs \$1.20.

Certain design principles, based on experience gained from existing continuously-reinforced-concrete pavements, are proposed in the first paper in Bulletin 181. The second paper is a preliminary report on the construction procedures and investigatory details of experimental continuously-reinforced-concrete pavements constructed by the Pennsylvania Department of Highways. The price of this bulletin is 60 cents.

A standardizing strain gage for measurements requiring long-time stability, calorimeter-strain apparatus for study of freezing and thawing concrete, and the AE-55 indicator for air in concrete are all discussed in Bulletin 176. It is priced at 60 cents.

## Revised safety manual issued by the AGC

The fifth revised edition of the "Manual of Accident Prevention in Construction" has been published by The Associated General Contractors of America. For the first time, the edition has been printed in loose-leaf form to permit frequent additions and changes in the future.

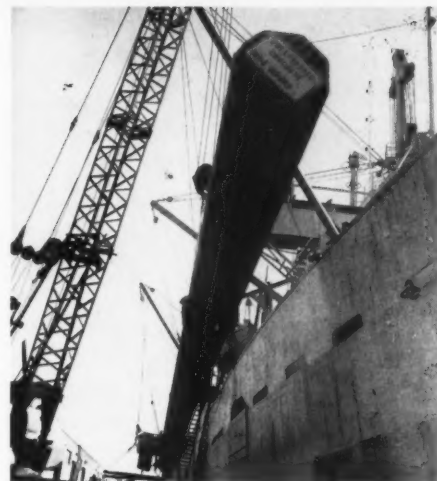
Sections on explosives, concrete construction, scaffolding, power tools, and marine equipment have been enlarged and brought up to date. A section on powder-actuated tools has been added, and the section dealing with highway construction has been enlarged in scope. Numerous illustrations, tables and charts have been added.

Copies of the manual are priced at \$3.25 each, plus postage, and may be purchased from the AGC, 20th and E Streets N. W., Washington 6, D. C.

## Gardner-Denver names winners of slogan contest

To spark off its coming Centennial in 1959, the Gardner-Denver Co., Quincy, Ill., recently sponsored a slogan contest, open to company employees and their families around the world. First prize—10 shares of company stock—was awarded to John H. Bent of Fullerton, Calif., engineer at the West Coast fabricating division, for his slogan, "Equipment Today for the Challenge of Tomorrow". Cash prizes of \$50 each were awarded to ten other finalists.

A RECORD for long-distance shipment of prestressed piles is claimed by the Precast Prestressed Concrete Division of Ben C. Gerwick, Inc. The piles, 18 inches octagonal and 70 feet long, were shipped from Richmond, Calif., to Kuwait in the Persian Gulf. They are to be driven as test piles at Kuwait prior to the production of such units at the site. According to the company, shipping from Richmond will save considerable time over the alternative of waiting for bed installation at Kuwait and casting test piles there.

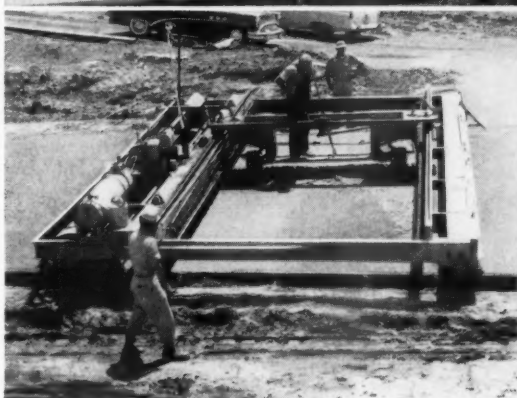


# TRANSVERSE FINISHER

with KOEHRING PAVING "PACKAGE"



New Koehring Transverse Finisher produces a mechanically-accurate slab surface that meets the most rigid highway and airport specifications. Precision controls assure uniform crown transitions, maintain proper thickness of concrete at all times.



LONGITUDINAL FINISHER

For "timely" precision finishing also use this Koehring Longitudinal Finisher. It handles all consistencies of concrete — harsh, wet or dry — overcomes slump difficulties on grades and elevated curves — provides final and accurate finish to meet engineering specifications.



twinbatch® PAVER

By saving seconds in every operation big Koehring 34-E twinbatch® paver delivers more batches per hour, more concrete per shift, at lower cost and greater profit. Based on 60 sec. mixing cycle, it hits a top output of 86.7 batches per hr. Also check the mobility of Koehring rubber-tired 16-E twinbatch paver.

Meet the latest addition to the big Koehring line of paving equipment — the Transverse Finisher. One-man operated, this fast working unit provides efficient, low-cost finishing for all paving jobs. Here's a quick "preview" of its outstanding features.

- 2 oscillating screeds — both screeds adjustable to finish all types of concrete — rear-screed follows rear-wheels.
- Hydraulic screed control — just a flick of a lever, raises or lowers screeds instantly.
- Single lever adjustment for crown transitions.
- Adjustable frame that extends, or retracts hydraulically.
- 3 traction speeds for finishing — additional high speed for travelling.
- 3 screed oscillation speeds — with variable length of screed stroke.
- Rubber-tired transport wheels that lower and raise hydraulically.
- Want more facts? See your Koehring distributor, or send coupon.

KOEHRING DIVISION  
KOEHRING COMPANY

3026 W. Concordia Ave.  
Milwaukee 16, Wisconsin

Send us more information on new Transverse Finisher

Name.....

Title.....

Company.....

Division.....

Street.....

City, State.....

C&E K850

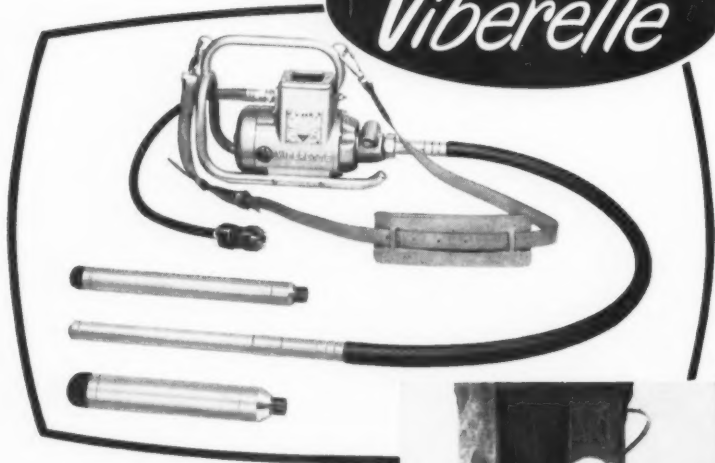
For more facts, use coupon, or Request Card at page 18 and circle No. 241



Opening session of the Congress was held in the main auditorium that seats 1,252.

*Hard to reach places  
are easy for...*

the powerful  
**Viberette**



**in prestress work  
in narrow forms**

Hard-to-reach places and narrow stems of prestress T-sections are no longer a problem when the new Viberette Vibrator is on the job. It is designed especially for prestress and narrow form building construction.

The 12,000 rpm speed and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete.

A small diameter flexible drive with replaceable rubber tipped head makes it ideal for concrete compaction in constricted areas.

A powerful, universal 3/4 HP electric motor gives Viberette plenty of "kick" for thorough vibration.

The 19 lb. Viberette Vibrator with new, dual grip, skid type handle makes the entire unit easy for one man to operate. A new shoulder strap attachment leaves both hands of operator free to manipulate the flexible drive.



**Features**

- Interchangeable heads—1", 1-5/16" and 1-3/4" dia.
- Flexible drive lengths—1' to 20'
- Quick release drive connection
- Replaceable rubber or steel tips



**VIBRATORS**

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 242

## Delegates from 44 countries attend prestressed conference

After meeting in London (1953) and Amsterdam (1955), the Federation Internationale de la Precontrainte (FIP)—or, as phrased in English, the International Prestressing Federation—chose Berlin as the site for its Third International Prestressed Concrete Congress.

Some 1,198 registered delegates from 44 countries, including 79 persons from the United States, assembled May 5 through May 10 in West Berlin's new Congress Hall, which was built only last year under the sponsorship of the Benjamin Franklin Foundation, a German-American body.

The principal business of the week's gathering was conducted in four working sessions. Each session had its

particular theme, as follows:

I. Developments in Design Methods;  
II. Progress in Prestressing Technique as Applied on the Site, with special reference to grouting, anchorages, reduction of friction, and safety precautions;

III. Progress in the Manufacture of Factory-made Precast, Prestressed-Concrete Units, and in Their Use and Assembly on the Site;

IV. Short papers on structures executed wholly or partly in prestressed concrete since the 1955 Congress, and embodying important developments in design or construction.

Well in advance of this Congress, authors from 20 countries prepared 62 papers (including four from the United States) for the first three ses-

## Standard Steel MODEL 55 Tandem Roller

1 1/2 to 2 1/2  
TONS

for **ECONOMY...**  
**SPEED**



**BUILT LIKE  
THE BIG ONES  
PERFORMS LIKE  
THE BIG ONES**

**Provides FLUSH CURB  
Rolling on Each Side**

THE MODEL 55 ROLLER was designed to provide two important advantages: (1) Adequate compaction for patch rolling requirements and (2) Ideal roll dimensions for smoothing and finishing work. Ballasting is evenly distributed through the use of both steel and water ballast. Steel ballast is removable in 70# sections providing a wide choice of compaction ranges.

The Model 55 will roll to within 2 inches of wall or building on driver's side and to 4 1/2 inches on opposite side. Eight inch ground clearance provides flush rolling adjacent to curbs. Automotive steering makes easy driving. Up-hoistered seat, safety seat rail, speed control, throttle and foot brake are of motor-car type—and water valve is in easy reach of operator. The maximum weight with all ballast is 4600#. Shipping weight is 3600#. Speed—from 1.75 MPH to 3.5 MPH.



**TRAILERIZED FOR EASY  
TRAVEL FROM JOB TO JOB**

Photo above shows ease with which roller is loaded and unloaded from trailer. One man can easily lift and hook it to towing vehicle.

Loading Ramp becomes end gate. Roller locks on trailer for safe travel at all speeds. Write for FREE Catalog and Prices.



**Standard Steel Works, Inc.** NORTH KANSAS CITY, MO

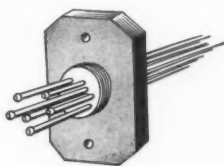
For more facts, use Request Card at page 18 and circle No. 243

CONTRACTORS AND ENGINEERS



**Berlin gathering discusses development in design methods;  
site techniques; factory-made prestressed-concrete units**

by WILLIAM H. QUIRK  
editor



sions — 24 papers on Theme I, and 19 each on Themes II and III. Material on Theme or Session IV was not prepared in finished form before the meeting.

The formal papers were made available to members of the Congress months before the meeting, so that they might have the opportunity of discussing them in Berlin at the working sessions. Copies of the prepared papers were also distributed to delegates as they registered at Congress Hall. Papers could be written in any one of the official languages of the Congress — German, English, French, or Spanish — and were printed in the original language in which they were submitted.

At the Congress, the language prob-

lem was handled by a staff of 12 translators, three for each of the official languages. They sat in sound-proof booths at the rear of the auditorium, listening with earphones to the speaker on the platform. They translated his words into a microphone, split seconds after they were uttered. Each of the 1,252 seats in the big convention hall was equipped with a plastic earphone. A four-way switch on the arm of the seat permitted a selection of any of the four languages. The almost simultaneous translation enabled the delegates to follow the speaker closely, and was especially helpful when slides were being explained.

At each working session a General Reporter first covered the main points

contained in the papers submitted. Delegates who had themselves submitted papers were then given an opportunity to comment on other papers, insofar as these were referred to in the general report. A general discussion, limited to points covered in the report, followed. Then authors whose papers were discussed were given an opportunity to reply. Finally, the General Reporter summarized the results of each working session.

**Development in design methods**

Hubert Rüsch, a professor at the Technische Hochschule in Munich, was General Reporter at Session I—Developments in Design Methods. Papers on this subject dealt with the

(Continued on next page)

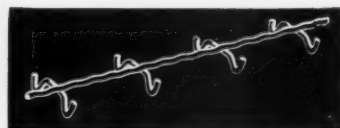


Presiding at Session IV is Prof. T. Y. Lin of the Civil Engineering Dept., University of California. Peter Misch (Germany) secretary of the Congress, is to the right.

**TIME  
SAVED  
TWICE!  
with  
SYLGAB**

**Continuous  
BAR BOLSTER  
SUPPORTS**

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.



**A RUGGED SUPPORT  
FOR SLAB  
REINFORCEMENT**

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

Member Concrete Reinforcing Steel Institute

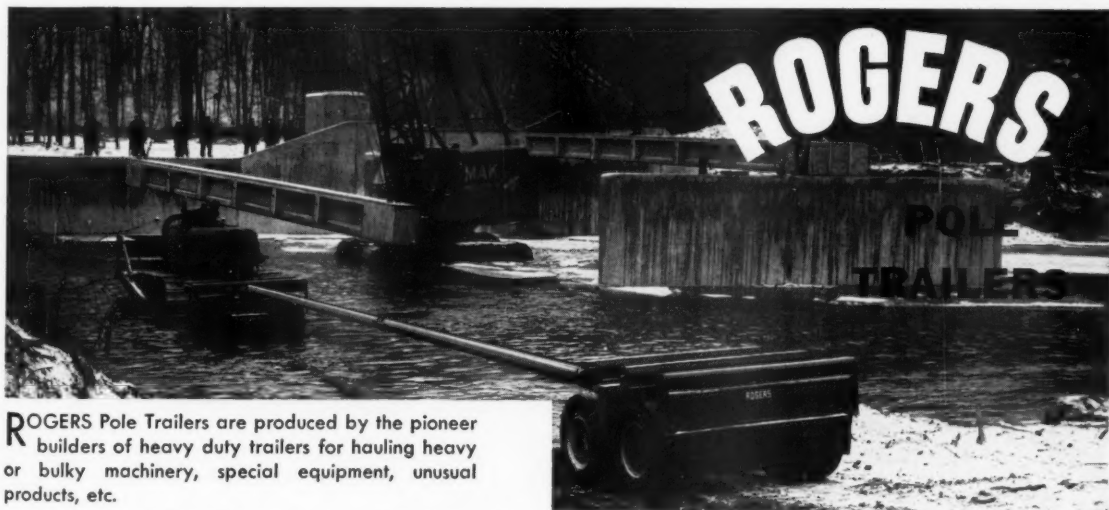
Manufacturers of Steel and Wire Accessories for Concrete and Fire-proof Construction.



**SYLGAB**  
**STEEL & WIRE CORP.**  
79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS  
EXPANSIBLE CLIPS  
STRAIGHT AND COIL WIRE  
HAIRPIN CLIPS • TOGGLE HANGERS  
FORM SPACERS • BAR ACCESSORIES  
Request Catalog—Phone or Wire Collect

For more facts, circle No. 245



**ROGERS Pole Trailers** are produced by the pioneer builders of heavy duty trailers for hauling heavy or bulky machinery, special equipment, unusual products, etc.

They feature facility of loading, ease of handling, safety of control and ruggedness.

In addition to rugged construction throughout including the use of large brakes and heavy duty roller bearings, versatility is a feature of these Roger Pole Trailers.

They have been in use for decades hauling long, unwieldy products including steel beams, iron bars, smoke stacks, special equipment, coast defense guns, etc.

**With the development of prestressed concrete beams Rogers Pole Trailers were proven to meet the unusual requirements of this type of hauling.**



**ROGERS HEAVY DUTY TRAILERS**

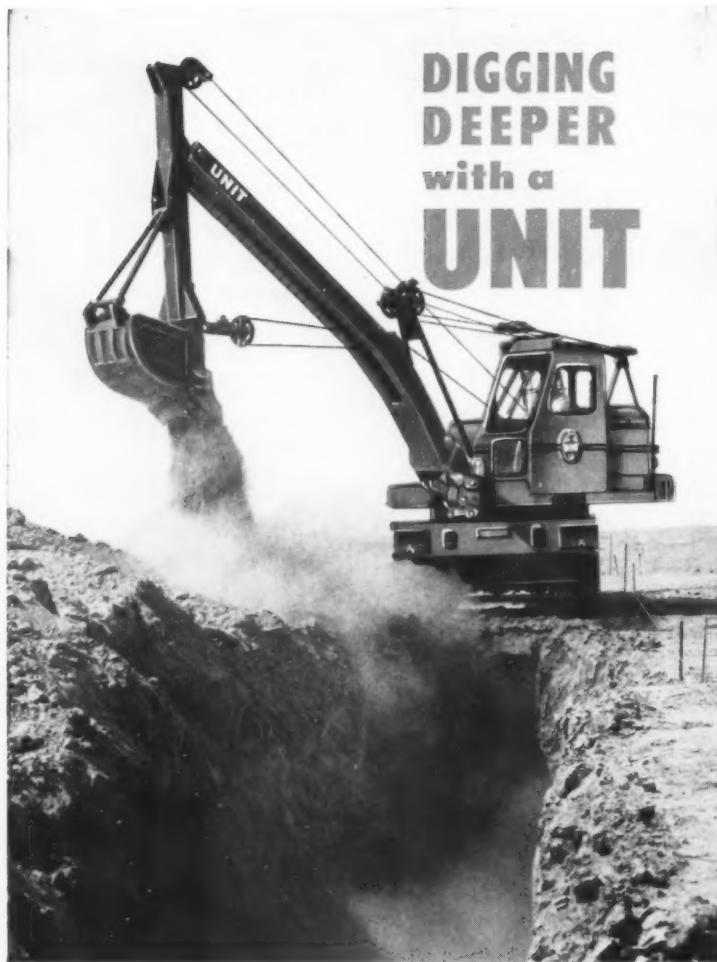
ROGERS BROS. CORP. ALBION, PENNA.

Export Office: 50 CHURCH ST., NEW YORK 7, N. Y. U.S.A. Cable Address: Brosites

For more facts, use Request Card at page 18 and circle No. 244



At the opening-day session on the rostrum were, from left: Hans Minetti (Germany), president of the German Concrete Assn.; Eduardo Torroja (Spain), president of the FIP; Willy Brandt, Mayor of Berlin; Philip Gooding (Great Britain), general secretary, FIP; Rolf Schwedler, senator for building and housing, Berlin; Peter Misch, secretary of the Congress.



### You'll Dig More Jobs At More Profit With A UNIT TRENCHOE!

Accurate deep digging of trenches for pipelines, sewers, water connections, footings, basements and culverts is easily and quickly accomplished with a UNIT Trenchoe. The "Goose-neck" boom with its long deep reach assures maximum production. Also saves time trimming vertical sidewalls and corners, and in leveling floor surfaces. Powerful... Compact... Perfectly Balanced. Every UNIT is designed to meet the most rigid demands. Investigate today and earn more pay.



UNIT models are available in 1/2 or 3/4 yard Excavators... Cranes up to 20 tons capacity... Crawler or Mobile types... Gasoline or Diesel. Ask for literature.

**UNIT CRANE & SHOVEL CORPORATION**  
6309 W. Burnham St. • Milwaukee 14, Wis., U. S. A.

*Geared to Produce Maximum Utilization*



For more facts, use Request Card at page 18 and circle No. 246

(Continued from preceding page)

dimensioning of prestressed-concrete structures under the action of compression, bending, shear, and torsion. A few also covered special structural forms and the consideration of prestress in building codes.

A contribution from the United States under the above theme was a paper by Dr. Rene Walther of Lehigh University, Bethlehem, Pa. He suggested a method for estimating the ultimate load of concrete beams from the stresses corresponding to the rotational deformations of the failure section about the neutral axis. This method was offered as an improvement on the empirical approach, and its theoretical predictions were reported to concur fairly well with test results. The theory is related to prestressed and web and compression reinforced-concrete beams.

In his general report, Professor Rüsch noted that all authors agree that shear failure is produced by the joint influence of moment and shearing force, and that the present method of dimensioning for each force acting separately has to be abandoned in any case. He also pointed out that shear failure is closely related to the flexural failure; that is to say, in both cases the rupture is brought about by the overcoming of the tensile strength. With flexural failure, this usually happens because of yielding of the steel; with shear failure, through diagonal cracking of the concrete. In both, the failure will be completed in the same way—by crushing the concrete. This compressive failure, according to the report, can occur in different places.

In summarizing, Professor Rüsch stated that the problem of prestressed concrete farthest from a solution is still shear strength, but although a final solution has not yet been found, the existing experimental results and

hypotheses of failure do permit engineers to design safely.

Some of the forms under discussion in this session included shells, pressure tunnels, and bridges. A paper by four delegates from the U.S.S.R. described the building codes in Russia applying to the design of prestressed structures. Professor Andre Paduart of the University of Brussels compared specifications laid down in various countries. He also proposed an international unification of specifications for prestressed structures, and invited critical comments in order that the extent to which such a unification is already possible may be revealed. His proposal was given general support.

#### Progress in site techniques

For Session II, Gerrit F. Janssonius served as General Reporter. From Amsterdam, Mr. Janssonius is chief engineer of bridges in the Public Works Division. Under the theme of Progress in Prestressing Technique as Applied on the Site, the papers and discussion covered grouting, friction, anchorages, steel, and glass fiber.

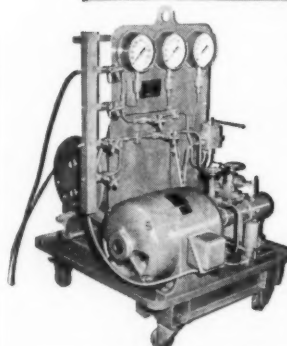
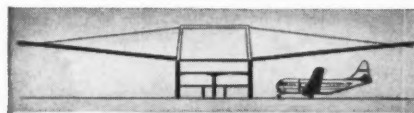
The General Reporter, in reviewing the papers, stated that the quality of grouting does not always conform to the anticipated service life of the structure. Also, that in the sphere of post-tensioned prestressed concrete, the improvement of the quality of grouting is therefore still an urgent problem.

One paper called attention to the main objectives of grouting as being:

- to protect the prestressing steel against corrosion and thus to increase the durability of the structure;
- to increase the ultimate strength by producing the best possible bond between the prestressing steel and the surrounding concrete.

This same paper, prepared by the

## HYDRAULIC JACKS AND PUMPS FOR ANY PRESTRESS JOB



The Corbetta Construction Company used our center hole rams and hydraulic pumps to meet the challenge of cantilever design in the new Pan American World Airways terminal at New York's International Airport.

Our complete line of hydraulic equipment is competitively priced and designed to meet your specific application on any prestress job. Your inquiry is invited.



### INTERCONTINENTAL EQUIPMENT CO., INC.

Prestressed Concrete Division  
120 Broadway, New York 5, N. Y.

ASSOCIATE MEMBER PCI

For more facts, use Request Card at page 18 and circle No. 247

CONTRACTORS AND ENGINEERS



mit engi-  
er discus-  
ed shells,  
es. A paper  
e U.S.S.R.  
in Russia  
restressed  
e Paduart  
sels com-  
down in  
oposed an  
specifica-  
ures, and  
in order  
h a unifi-  
ay be re-  
ven gen-

es  
anssonius  
er. From  
is chief  
e Public  
theme of  
unique as  
pers and  
friction,  
über.  
reviewing  
uality of  
nform to  
of the  
phere of  
concrete,  
ality of  
a urgent

a to the  
s being:  
ng steel  
increase  
strength  
le bond  
and the

by the

S

OB



A

INEERS

Netherlands Committee on Grouting, formulated the following five requirements which the grout must fulfill after hardening:

1. It must fill the ducts.
2. When set it must adhere closely to both the steel and the inside walls of the ducts.
3. Its compressive strength must be adequate.
4. It must not, a few days after setting, swell at low temperatures.
5. It must not corrode the steel.

From the papers dealing with friction, Janssonius concluded that there are, in the main, three places where friction may occur: in the jack; possibly in the anchorage device; and between the prestressing steel and the wall of the duct. He also gave as his opinion that the only really satisfactory cables are those which turn through as small an angle as possible, and he strongly deprecated the use of cables which curve sinuously in two directions.

Four papers reported on new types of anchorages. One discussed 200-foot cables provided with a "blind" anchorage at one end. A cable of this kind has a capacity of up to 1,400 tons and is used in the construction of large dams. Projects now in the planning stage envisage cables that can be stressed up to 2,500 tons each.

Another described an anchorage device used in conjunction with a new type of prestressing cable. This 65-ton cable comprises seven strands, each of which is composed of seven wires of 3.6-mm diameter. The anchorage consists of a hollow barrel with seven internal wedges. When the barrel is forced over the wedges, the strands of the cable are pressed into the wedges (which undergo a certain amount of plastic deformation and thus take an imprint of the strands). The force exerted by the cable is taken up by the wedges and transmitted to the concrete through a bearing plate. This method requires a special double-acting jack. The two functions of the jack are tensioning the cable and effecting the anchorage.

With reference to the 65-ton cable just mentioned, the General Reporter pointed out that because of its flexibility it was easy to install; also, that the high quality of steel associated with the use of these small wire diameters is a considerable advantage. Further, owing to the low ap-

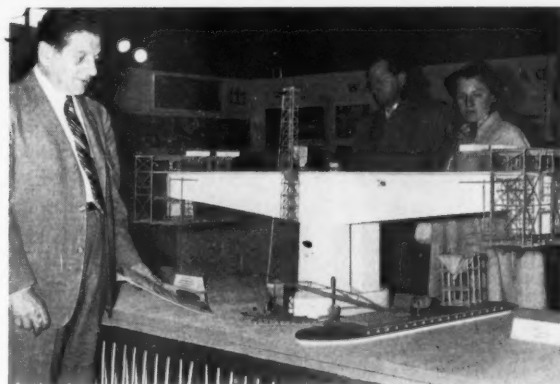
parent modulus of elasticity, the effect of shrinkage and creep of the concrete is less than with other types of cable. The sheath used with this flexible cable is a rigid, thin-walled steel tube.

Another type of material for prestressing, made of glass fiber, was treated comprehensively in a paper by Stanislaw Kajfasz of the Polish Academy of Science in Warsaw.

#### Factory-made units

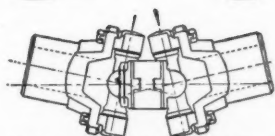
Dudley H. New, chief structural engineer, Holland & Hannen and Cubitts Ltd., London, served as General Reporter for Session III—Progress in the Manufacture of Factory-made

(Continued on next page)

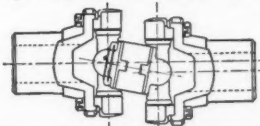


Ernst Gruenwald (U.S.) examines model showing construction of prestressed bridge. Gruenwald is manager, "Incor" and Technical Service, Lone Star Cement Co., New York, N. Y.

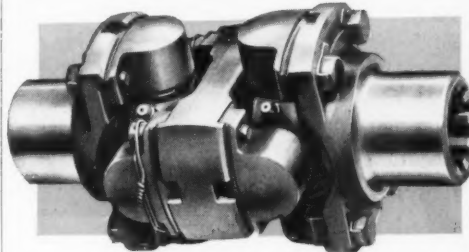
## FLEXIBLE



High Angularity in Cramped Space



Compensates for Out of Alignment

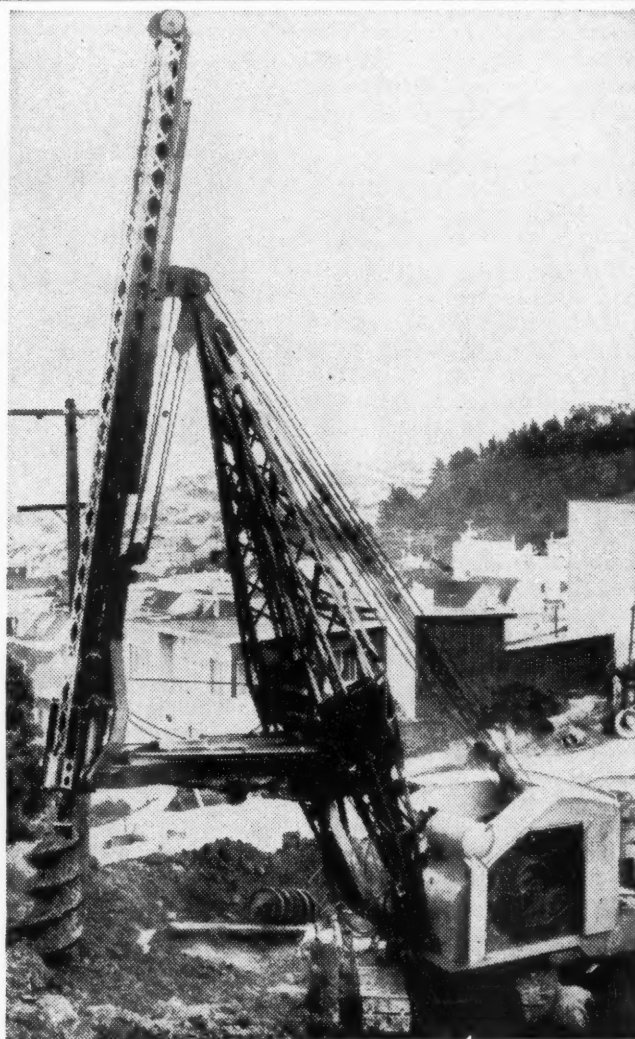


In cramped quarters — where starts, stops and reverses are frequent — loads heavy and torque requirements severe — amid dust and moisture — **MECHANICS Close-Coupled, Roller Bearing UNIVERSAL JOINTS** serve dependably, safely and economically. They perform equally well in other rugged machines where joint space is limited and angles are extreme. Let **MECHANICS** engineers help you with your joint problems.

**MECHANICS UNIVERSAL JOINT DIVISION**  
Borg-Warner • 2030 Harrison Ave., Rockford, Ill.

Export Sales: Borg-Warner International  
36 So. Wabash, Chicago 3, Illinois

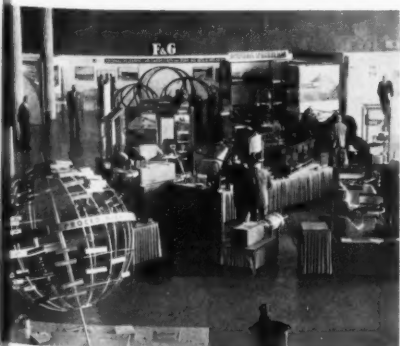
For more facts, use Request Card at page 18 and circle No. 248



**LARGEST OF ITS KIND IN THE WORLD**, reportedly, is this huge earth-drilling machine, weighing 70,000 lbs. Recently used on the Portola Drive widening project in San Francisco, it was developed by Fred Pavlow, owner of P & Z Co., South San Francisco. Pavlow said the machine is ready for work 15 minutes after wheeling up to the job site and drills piling holes as large as eight ft. in diameter, at any angle and more than 100 ft. into ground.

**MECHANICS**  
Roller Bearing   
**UNIVERSAL JOINTS**

For Cars • Trucks • Tractors • Farm Implements • Road Machinery •  
Aircraft • Tanks • Busses and Industrial Equipment



Some 20 manufacturers were represented at the Exhibit. Freyssinet exhibit with globe in foreground.

SEPTEMBER, 1958

(Continued from preceding page)

Precast, Prestressed-Concrete Units, and in Their Use and Assembly on the Site. Three delegates from the United States contributed papers on this theme.

Harold A. Price of Basalt Rock Co., Napa, Calif., and vice president of the Prestressed Concrete Institute, discussed "The Current Status of the Art of Prestressing as Practiced by American Manufacturers". His paper dealt mainly with the production of standard units on the fully bonded long-line process, particularly double-tee units, prestressed with 7-wire strands. The demand for these units has increased so rapidly that now nearly 200 factories are engaged in their manufacture. Mention was made of the difficulty in controlling differential camber between similar units, a matter which is, of course, of considerable concern to all manufacturers. The paper stated that in order to reduce the number of skilled men needed, there is a move in the interest of economy for post-tensioning generally to replace the long-line process. This has not been suggested from any other country.

As to bridge beams, Price gave details of hollow bridge beams, and mentioned the deflection upwards at the ends of tendons in fully bonded beams. He stated that post-tensioned beams are prestressed with screwed rods, Freyssinet cables, or wires with button heads.

He also mentioned prestressed piling of hollow section, the holes being formed with cylindrical fiber-board tubes that remain in the concrete, or by inflated rubber tubes. He stated that seven-strand tendons are invariably used for prestressing fully bonded piles. Post-tensioned piles of large diameter are made up from precast concrete cylinders prestressed together.

Ben C. Gerwick, Jr., of Ben C. Gerwick, Inc., San Francisco, and president of the Prestressed Concrete Institute, described "Plant Manufacture of Large Pretensioned Bridge Girders". In his general report, New observed that Gerwick made the point that, in view of the big handling problem involved in moving heavy bridge beams in the factory, it has been found more economical to manufacture a number of single beams side by side on a short wide bed than to use the long-line process. The practice of deflecting a proportion of the fully bonded tendons upwards toward the end of beams by the use of suitable anchoring devices was discussed. Mention was made of accelerated curing by placing well built insulated steam hoods over the units; this was found to give much improved results when compared with curing under canvas or tarpaulins.

Gerwick also dealt with the construction of bridge girders up to some 85 tons in weight and 36 meters in length, prestressed by the fully bonded method. Some details of the transport of long and heavy girders were given, including ocean tow on barges.

Eugene M. Smith of the Freyssinet

Co., New York, prepared a paper on "Precast Prestressed Construction in the U.S.A." He discussed the growth of prestressing in the United States and the advantages of precast concrete as compared with cast-in-site construction. Details were given of a typical plant for producing units by the long-line process.

From the papers offered, Reporter New concluded that advances in prestressed concrete seem to be in the increase of size and weight, and in the elaboration of existing methods, rather than in the development of entirely new techniques. He pointed out that there are still many problems on which there is still much development work to be done before spectacular advances in other directions are likely to be made. These problems include

development of bond, vertical stresses in the ends of a beam, joint conditions between adjacent elements, formation of economical and satisfactory bearings, the elimination of differential camber, and continuity over supports.

New also said that it appeared young engineers are giving great thought to the matter of economy in points such as the elimination of transverse stressing in bridge work; the avoidance of end blocks in beams produced on the long-line process; and methods of handling members in the factory and at the site. The most recent development mentioned, according to New, was that of the use of high-strength polyester resin in the joints between structural members made up by prestressing together a series of prestressed units.

#### Prestressed structures since 1955

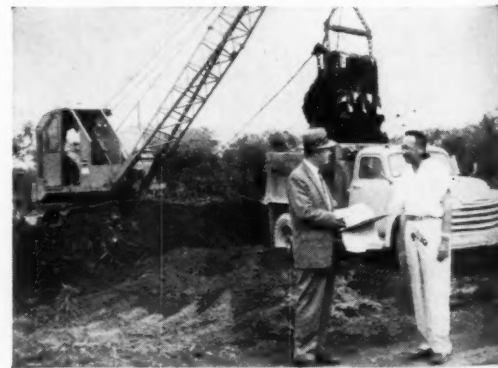
Working Session IV consisted of short papers on structures executed wholly or partly in prestressed concrete since the 1955 Congress, and embodying important developments in design or construction. Two periods were given over to this theme, with Fernand Dumas as General Reporter. M. Dumas is chief engineer of bridges and roads in the French Ministry of Public Works. He cited the evident development of prestressed concrete over the entire world from the 109 reports from 31 countries, covering 800 construction projects, that were submitted for this particular session. These reports described all types of work including bridges, runways, tunnels, silos, underground containers, cooling towers, chimneys, dams, piers,

## Reilly Gravel

# ...Pay Dirt



A Northwest Model 6 Shovel drops its load of a yard and one half of caliche gravel into a waiting dump truck. Periodic analysis of this gravel allows Mr. Reilly to keep a check on PI content and liquid limit. To date, all samples have been 50% better than required.



Mr. Reilly (right) and C.I.T. field representative Bob Logan talk over plans against the background of an Insley Dragline. Both the dragline and the Northwest Shovel were financed through C.I.T. Corporation.

## C.I.T. CORPORATION • MACHINERY AND EQUIPMENT

ATLANTA • BOSTON • CHICAGO • CLEVELAND • DALLAS • DENVER • DETROIT • HOUSTON  
NEW YORK • PHILADELPHIA • PORTLAND • SAN FRANCISCO • SEATTLE

CONTRACTORS AND ENGINEERS



ce 1955  
nsisted of  
s executed  
ressed con-  
gress, and  
pments in  
two periods  
eme, with  
Reporter.  
of bridges  
Ministry of  
e evident  
l concrete  
n the 109  
covering  
that were  
ur session.  
types of  
ways, tun-  
ontainers,  
ms, piers,

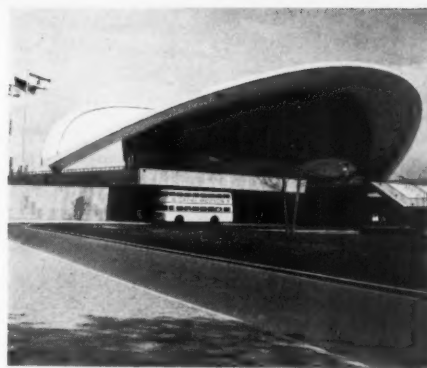
caissons, railway sleepers, buildings of all kinds, piles, etc.

According to the reporter, the reasons for this increase in the use of prestressed concrete are economy in price and material; reduction of maintenance cost; higher strength compared with normal reinforced concrete; resistance against impact, earthquake, and hurricanes.

One of the papers from the United States included in this session described "Offshore Structures on Prestressed-Concrete Cylinder Piles". It was presented by Tomasz Plodowski, an engineer with Raymond International, Inc., New York. The structures mentioned are designed and built for use in off-shore drilling for oil. In comparison to land construction, the materials employed in offshore struc-

tures, according to Plodowski, require better properties because they have to resist corrosion, chemical action due to continual submersion in water, effects of alternating submersion and drying, and mechanical action of waves, currents, floating objects, etc.

The author pointed out that with the development of prestressed concrete and the Raymond prestressed-concrete cylinder piles, the field of concrete application has widened considerably. "We can now build", he said, "a unique type of structure which has not before been possible. These structures are built under widely varying conditions. In each location the ocean floor will be different, and wave forces vary from 9-foot maximum waves in Lake Maracaibo to 40-foot waves and 125-mph hur-



West Berlin's new Congress Hall where the Third International Prestressed Concrete Congress was held May 5 through 10. The flag of the Federal Republic of Germany is flanked on either side by the flag of Berlin with its symbol of a bear.

## Birth in San Antonio



### ... C.I.T. Is On The Job, Too

Caliche gravel ... virgin top soil ... wood—these are the profit-making products of the E. T. Reilly Gravel Company of San Antonio, Texas. This 183 acre operation on Salado Creek is owned and operated by Mr. E. T. Reilly. Mr. Reilly and his crew operate 13 pieces of heavy equipment which keep up to 100 independently operated trucks busy hauling gravel.

C.I.T. Corporation financed most of Mr. Reilly's equipment through the South Texas Equipment Company and the Roy Klossner Company. In Mr. Reilly's words: "As a small business man, I could not afford to buy all of my needed equipment without aid. Some banks are reluctant to finance heavy machinery. I was able to purchase the machinery through the C.I.T. financing offered by both dealers."

#### How Job-Engineered Finance Plans Help Contractors

Payd Plan equipment financing terms to 6 years with payment schedules related to depreciation, or equal monthly payments over 36 months, or skip-payment plans where needed ... these are just a few of the helpful financing tools offered by C.I.T. Corporation.

In addition to equipment purchase financing, C.I.T. can help improve contractors' bid and bond capacity, meet current operating expenses or other business needs by arranging capital loans. C.I.T. representatives know how to lay out "job-engineered" finance plans, carefully devised to fit the needs. Why not call or write? No obligation, of course.

## EQUIPMENT FINANCING

HOUSTON JACKSONVILLE • KANSAS CITY • LOS ANGELES • MEMPHIS  
SEATTLE CANADA: CANADIAN ACCEPTANCE CORPORATION LIMITED



For more facts, use Request Card at page 18 and circle No. 249

ricane winds in the Gulf of Mexico. Earthquakes and high vibrations during drilling must also be taken into consideration."

Using slides, the Raymond International engineer described a 4-pile drilling platform in Lake Maracaibo, Venezuela. This structure, one of the simplest of its type, is designed for a water depth of up to 120 feet. The pile is a hollow cylinder, made up of 16-foot lengths that are placed end to end and held together by cables of steel wire. The pile has an outside diameter of 54 inches and a 5-inch wall. Each pile has 24 prestressing cables, and each cable is made up of twelve .192-inch-diameter wire. Piles extend about 7 feet above the water; their upper ends are held together with a welded structural framework. Plodowski also described three other larger types of structures in various off-shore locations.

#### Prestressed convention hall

The Berlin Congress Hall, where the meeting was held, was a good example of prestressed construction for the delegates to study. The supporting elements of the roof are the two arches which encircle the saddle-shaped roof area, and the ring that subdivides it into the inner rotation-parabolical sector above the auditorium and the outer sector between ring and arches. The span of the arches is 78.06 meters (256 feet); their inclination to the horizontal is 28.4 degrees.

Not counting ring and stiffening strips, the shell has a thickness of 7 cm (2 3/4 inches). It is prestressed transversely to its longitudinal axis. All prestressing elements are tensioned from the ring or from its stiffening, respectively, this being done separately for the inner and outer sectors of the ring. The arches and the ring stiffening transmit their load to the two abutments. Each abutment is supported on a foundation grill of 52 Franki piles.

Between sessions of the Congress, tours were arranged for the delegates to visit various prestressed-concrete structures and construction sites in both East and West Berlin. These included several bridges and flyovers, buildings, a sewage purification plant with eight prestressed sludge tanks,

(Continued on next page)

(Continued from preceding page)

stations on the Berlin underground railway (U-Bahn), and the concrete works at Grünau, belonging to VEB Betonwerke.

#### Prestressed exhibit

During the week of the meeting, manufacturers of prestressing equipment displayed their products in the exhibition room of Congress Hall. The area available for this showing totaled 1,070 square yards. About 20 German and foreign firms displayed models and photographs of their prestressing methods.

When sessions were not in progress, films were shown either in the main auditorium or in the theater of the Congress Hall. Each film was shown

twice during the week. The films were made in Soviet Russia, Germany, India, Austria, Mexico, and Italy, and presented some phase of prestressing in those countries.

Of the 1,198 registered delegates, a dozen countries sent 1,032 of the total. The other 166 attending came from the remaining 32 of the 44 countries represented. The host country, Germany, had 471 delegates from both its east and west political divisions. Other countries with sizable delegations included Great Britain, 118; U.S.A., 79; France, 56; The Netherlands and Switzerland, 49 each; Austria, 45; Sweden, 44; Italy, 34; Belgium, 33; Denmark and Spain, 27 each.

Of the 62 formal papers, 26 were presented in the English language; 20

in German; 13 in French; and 3 in Spanish. The 26 papers in English included not only those originating in English-speaking countries, but also three from Netherlands delegates, two from Denmark, two from Poland, and one each from Spain and the Soviet Union.

The Fourth International Prestressed Concrete Congress will be held in 1962, but the location for the meeting has not been selected.

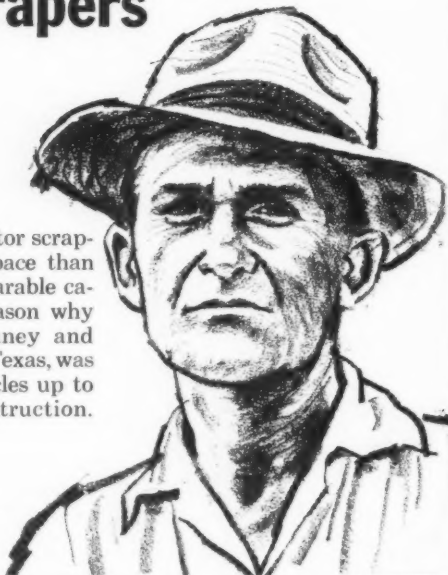
THE END

*Construction in Hawaii is now at its highest level since World War II, and further increases are expected. Altogether, those employed on projects in the territory number 11,030. This is 1,200 more than were employed a year ago.*

## Cuts cycle time 41% on watershed dams with Allis-Chalmers motor scrapers

Allis-Chalmers TS-260 motor scrapers turn around in less space than any other scraper of comparable capacity. That's one big reason why G. V. Walker of McKinney and Wheelock Co., Corsicana, Texas, was able to reduce hauling cycles up to 41 percent on dam construction. Here are the facts—

G. V. Walker, Supt.  
McKinney and Wheelock Co.



These Allis-Chalmers TS-260 motor scrapers save 42 miles of extra travel for McKinney and Wheelock Co. on a Texas earthfill dam because of their ability to make full turns after the dam became too narrow for other scrapers to turn on.

### 3 earthfill dams . . . 300,000 cu yd moved

Superintendent Walker reports a total of 300,000 cu yd of material moved on three recent Texas watershed dam jobs. On these operations there were three Allis-Chalmers TS-260 motor scrapers. The shorter turning radius of the TS-260's (full turns in 30 ft) allowed Walker to build the dams higher before the scrapers were forced to travel the full length of the dam to turn around.

### Saves 42 miles of extra travel

On Project 26, for example, Walker's TS-260's were able to carry 162 more short-haul loads because they continued to make full turns after the dam became too narrow for other scrapers to turn. When the dam reached that critical height, other scrapers required a total haul-return distance of 550,800 ft. The distance traveled by the TS-260's totaled only 324,000 ft . . . saving 226,800 ft or 42 travel miles.



Loaded TS-260 powers its way up grade to the rising dam.

Besides TS-260 turn-ability, Walker likes the positive, hydraulic, double-action bowl jacks that permit turn pressure for fast penetration of hard material. The curved cutting edge breaks up sandy Texas clay, "boils" it into the bowl. Material loads easier and fills every corner for maximum yardage each trip. Positive forced ejection makes fast and accurate spreading.

All in all, G. V. Walker sees his Allis-Chalmers dirt-moving fleet as a real money-maker and work-saver. See for yourself by asking your Allis-Chalmers construction machinery dealer for an on-the-job demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead...move ahead  
...and stay ahead with

# ALLIS-CHALMERS



For more facts, use Request Card at page 18 and circle No. 250

See a participating  
**BLUE BRUTE  
DISTRIBUTOR**  
for more details  
about the  
Guaranteed  
Availability Plan

**ALABAMA**  
Birmingham  
Salmon & Co.  
**ARIZONA**  
Phoenix  
Junction Bit & Tool Co.  
**CALIFORNIA**  
Arcata  
Humboldt Machine Works  
Los Angeles  
Essick Machinery Co.  
Richmond  
L. E. McDowell Co.  
San Francisco  
Western Traction Co.  
**COLORADO**  
Denver  
Power Rental Equipment, Inc.  
**CONNECTICUT**  
Hartford  
Construction Equipment Co.  
**FLORIDA**  
North Miami  
A. W. Thomas Construction Machinery, Inc.  
Orlando  
Highway Equipment & Supply Co.  
**GEORGIA**  
Atlanta, Macon  
Tractor & Machinery Co., Inc.  
**ILLINOIS**  
Chicago  
Baker Equipment Co.  
**KANSAS**  
Hutchinson  
The Hutchinson Foundry & Steel Co.  
**LOUISIANA**  
Baton Rouge  
The "K" Way Equipment Co.  
**MARYLAND**  
Baltimore, Washington  
Elphinstone, Inc.  
Baltimore, Berwyn  
Free State Equipment Co., Inc.  
**MASSACHUSETTS**  
Burlington  
Morrissey Bros. Tractor Co.  
**MICHIGAN**  
Muskegon  
Great Lakes Equipment Co.  
Detroit  
J. R. Panelli Equipment Co.  
**MINNESOTA**  
Minneapolis  
Minneapolis Equipment Co.  
**MISSOURI**  
Kansas City  
Machinery & Supplies Co.  
St. Louis  
Hennessey-Forrestal Machinery Co.  
**NEBRASKA**  
Omaha  
Nebraska Tractor and Equipment Co.  
**NEVADA**  
Reno  
Sanford Tractor and Equipment Co.  
**NEW JERSEY**  
Dunellen  
Miller Equipment Co.  
North Bergen  
American Air Compressor Corp.  
**NEW YORK**  
Astoria  
Heil Equipment Co. of New York, Inc.  
Buffalo, Rochester  
Murray Construction Equipment Corp.  
**NORTH CAROLINA**  
Charlotte  
Spartan Equipment Co.  
**OHIO**  
Toledo  
Beasley-Holmes Co.  
**OREGON**  
Eugene, Portland  
Western Equipment Co.  
**PENNSYLVANIA**  
Mechanicsburg  
American Equipment Corp.  
Forty Fort  
The Fred Greenley Machinery Co.  
Philadelphia  
Metalweld, Inc.  
**RHODE ISLAND**  
Providence  
B.M.G. Equipment Co.  
**TENNESSEE**  
Memphis  
Carey Equipment Co.  
**TEXAS**  
Fort Worth, Dallas, El Paso, Odessa,  
Longview, Lubbock, Borger, Farmington, Albuquerque (N. M.)  
Big Three Welding Supply  
**WEST VIRGINIA**  
Charleston  
Construction Equipment Inc.

CONTRACTORS AND ENGINEERS



ing  
E  
R  
s

n

Machin-  
Co.

el Co.

Co.

t Co.

Co.

, Inc.  
Corp.

essa,  
ning-

EERS



*Give your Blue Brute a breather..*

## BORROW AN AIR TOOL FREE FROM YOUR DISTRIBUTOR UNDER THE GUARANTEED AVAILABILITY PLAN

Worthington Blue Brute tools are gluttons for punishment. Check. But even a Blue Brute needs an occasional check-up. That's when you'll appreciate the new Guaranteed Availability Plan of your Blue Brute distributors listed at the left.

Here's how G.A.P. works: 1) you bring in your hand-held Blue Brute

tool for repairs. While it's in the distributor's shop, 2) he lends you an air tool to keep the job going. He's got a complete line of Blue Brute tools to choose from. He also carries a large inventory of "Blue-Coated" parts so that repairs or replacements are made quickly and inexpensively.

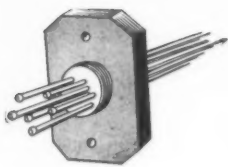
It adds up to this: buy Blue Brute tools and "no time is down-time." See your nearest Blue Brute distributor for the complete details about the Guaranteed Availability Plan.

60-1

**WORTHINGTON**



For more facts, use Request Card at page 18 and circle No. 251



Expanding market

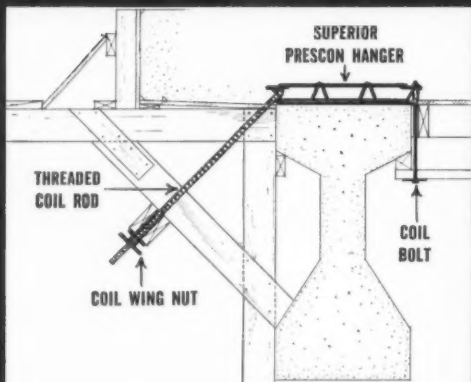
for prestressed components means

## Expanding prestress plant

### HANG DECK FORMS FROM PRECAST AND PRESTRESSED BEAMS



↑ PRESCON HANGERS with deck forms in position. Safe working loads up to 10,000 lbs.



Extended side or overhang can be suspended as shown. SUPERIOR Threaded Coil Rod of any required length is passed thru 45° hole in Hanger and adjustment is made with Coil Wing Nut. The use of Prescon Hangers eliminates hazardous, makeshift methods.

↓ WITH SUPERIOR PRESCON HANGERS the necessary adjustment to bring the deck form up to grade is made conveniently from the TOP.



### with **SUPERIOR** **PRESCON HANGERS**

- ✓ Adjusts From TOP of deck
- ✓ Broad Bearing Area
- ✓ Haunch Forming as required
- ✓ Vertical and 45° Suspension
- ✓ Safe Loads—6,000 and 10,000 lbs.
- ✓ Fast Erection—Easy Stripping

Specially developed by SUPERIOR for hanging deck forms from precast and prestressed concrete girders, the Prescon Hanger provides hanging points cantilevered away from the girder sides. Provision is also made for haunch forming above the girder. The Hanger is designed with broad bearing area for maximum stability and to prevent any crushing of the concrete girder.

With the Prescon Hanger, form height adjustment is conveniently made from the TOP of the deck. The forms are hung from Coil Bolts\* threaded into heavy, square coil nuts bearing on the flat top plate of the Prescon Hanger. Extended side or overhang forming is accomplished with the 45° coil rod and coil wing nut, as shown in diagram at left.

\*Coil Bolts and Flat Washers are returnable for credit.

#### SAFE LOADS

TWO CAPACITIES ARE AVAILABLE: 6M (6,000 lb. safe load)—10M (10,000 lb. safe load). These are safe working loads on the entire hanger. Either size can be furnished for any flange width.

FORM ENGINEERING SERVICE—SUPERIOR has competent engineers constantly engaged in the preparation of form layouts, estimates and quotations. This service is furnished without charge.

SUPERIOR Hanger Frames and Beams Saddles are also available for hanging forms from steel beams and girders.

WRITE FOR 6 PAGE BULLETIN BB 458

## **SUPERIOR** CONCRETE ACCESSORIES, INC.

9301 King St., Franklin Park, Ill. (A suburb of Chicago)  
New York Office/1775 Broadway, New York 19, N.Y.  
Houston Office/4101 San Jacinto, Houston 4, Texas.  
Pacific Coast Plant/2100 Williams St., San Leandro, Cal.

For more facts, use Request Card at page 18 and circle No. 252

Continual expansion of its facilities has given Florida Prestressed Concrete Co., Inc., Tampa, Fla., a commercial plant setup capable of producing about 10,000 linear feet of prestressed or precast components. The plant's 12 working beds of various lengths have been built for flexibility so that changes in the normal production of the various casting beds can be made.

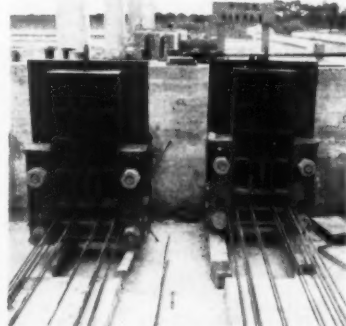
#### Overhead crane setup

The two 400-foot-long girder casting beds—each with four rows for Type II and Type III girders—are served by two overhead gantry cranes riding on column-supported prestressed girders. Type II girders span the 2-foot 6-inch x 20-inch precast columns, which are spaced on 25-foot centers along the outside of the parallel beds. The columns are 28 feet high.

A 48-foot span was required in each row to provide clearance for a railroad spur servicing the company's batch plant and to permit direct loading of completed girder sections onto rail cars for shipment. To span this distance, Florida Prestressed used a pair of Type II girders to support the track of the gantry.

Two 15-ton electrically operated gantry cranes, spanning the 75-foot distance between the column rows, are used for all kinds of work from stringing the pretensioning strands to pouring concrete.

The two universal beds vary in width—one is 12, the other, 15 feet wide. The smaller is used for Type II girder pours and the larger for Type III girders. The area spanned by the gantries is wide enough to per-

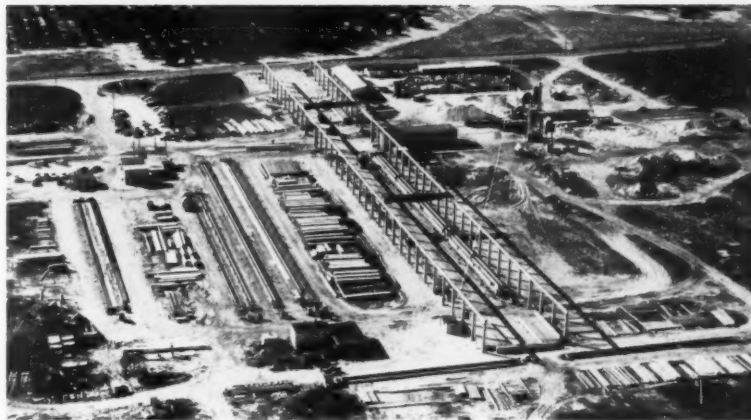


Special header strand plates developed and built by Florida Prestressed make it possible to thread strands in any combination. Four tie bars connect each header plate to the push-plate, which is on the opposite side of the concrete-encased anchor column.

CONTRACTORS AND ENGINEERS



Dominating the view of Florida Prestressed Concrete Co.'s yard from the air is the overhead gantry setup. Gantries ride column-supported prestressed girders as they serve two 400-foot-long girder beds. The overhead setup spans the railroad spur serving the batch plant, right. Other beds, left, give the yard a capacity of 10,000 linear feet of prestressed units.



Florida Prestressed Concrete Co.'s smooth-running commercial operation is well equipped. Europa or Reliable strand vises fasten strands to header plates. Rodgers 200 and 300-ton jacks, used to put tension on the strands, are powered by Rodgers pumps. A Koehring crane is used to bring aggregates to the Blaw-Knox batch plant that supplies concrete for the yard. Watco steel forms, furnished by Plant City Steel Corp., Plant City, Fla., are being used, and pours are being vibrated by Vibro-Plus units. Miscellaneous lifts around the yard are being handled by an Austin-Western hydraulic crane.

mit the addition of up to three more casting beds if necessary.

Florida Prestressed developed and built special header strand plates so that prestressing strands can be threaded in any combination. Strands are fastened to these plates by strand vises. Four steel bars tie the header plate of each row to the push-block on the opposite side of the concrete-encased steel anchor column.

Florida Prestressed uses 200 and 300-ton hydraulic jacks to stress the pretensioning strands for the casting beds. The jacks are all powered and operated from a centrally located pump house. This power can be transmitted to any of the beds through hydraulic lines buried between the beds and pump house.

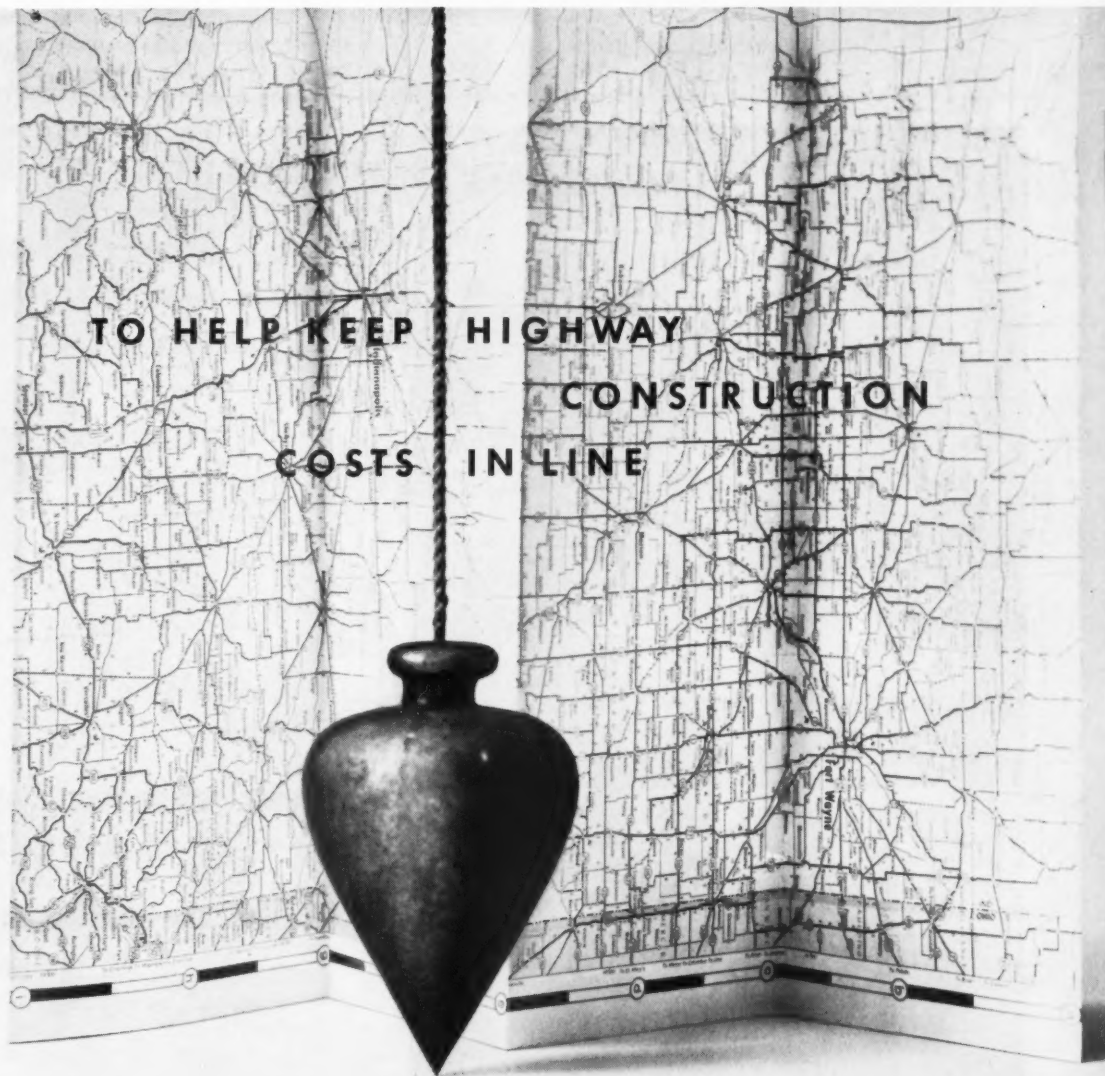
While the movement of jacks in the  
(Continued on next page)



Concrete is chuted from a transit mixer on a Mack truck to Plant City's Watco steel double-tee forms. Vibro-Plus units consolidate the mix. The firm has enough beds to pour a 400-foot run of 14-inch double-tee beams and a 280-foot run of 16-inch double-tee beams.

For more facts, circle No. 253→

TO HELP KEEP HIGHWAY  
CONSTRUCTION  
COSTS IN LINE



## Have a Materials Interchange Plan

Highway construction programs demand a dependable resource for materials. That's where Asphalt can help.

A number of Midwest road-building agencies have adopted a Materials Interchange Plan. Specifications and designs are prepared for the use of road-building materials available at time of construction. Engineering time and manpower is saved, and the redesigning of projects and re-writing of specifications is eliminated by including Asphalt in plans and specs at the beginning. Include Asphalt in your highway plans.

With Asphalt you can get into action fast and without the extensive engineering and planning other construction materials require. Less engineering manpower is needed to plan and build with Asphalt. New highway construction, as well as the rejuvenation and improvement of existing roads, costs less with Asphalt.

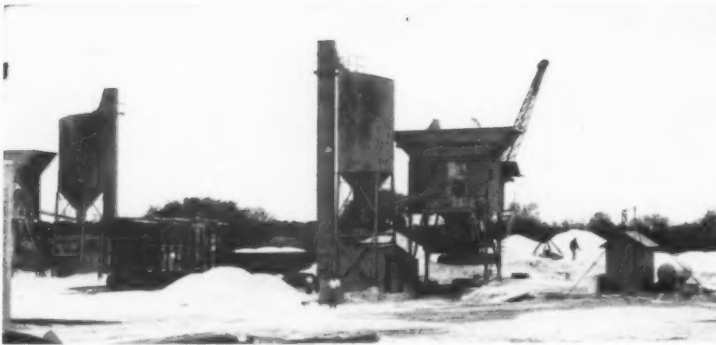
Standard Oil produces Asphalt at four convenient Midwest locations. Tank car and truck deliveries are made from the Standard Oil refinery nearest your job. Technical service on Asphalt is provided by men experienced in this work. And Standard Oil delivers on contracts in time of short supply as well as when materials are plentiful.

Get more facts about Asphalt from the Standard Oil office nearest you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

You expect more from **STANDARD** and get it!



(Continued from preceding page)



All concrete for work at the yard is turned out by this Blaw-Knox plant. The aggregate bin is being charged by the Koehring crane. The 400-barrel cement silo is kept full by under-track hopper, screw conveyor, and enclosed bucket elevator.

girder bed area is handled by the overhead cranes, Florida Prestressed uses a hydraulic crane to handle most of the miscellaneous lifts throughout the yard. A few jobs of this versatile and fast-moving rig are to position jacks from row to row of a casting bed as well as between casting beds; to strip and position side forms; and to pull strands from the dead to the live end of a bed.

#### Concrete plant

Supplying concrete mix for the prestress yard is a pair of batch plants on each side of the railroad spur serving the yard. Generally, one plant is used by the prestressing operation

while the other supplies mix to the contracting company affiliated with Florida Prestressed. A crane charges the plant with aggregate and sand from the surrounding stockpiles. Two transit-mix trucks, with 4 and 5-yard capacities, bring the mix to the casting beds.

In the girder bed area, the mix is chuted into concrete buckets handled by the overhead cranes. Elsewhere, the transit mixers chute the concrete into the fabricated steel forms. The transit-mix trucks can be used to place the concrete in the girder forms if there is room between the two beds. This will not be possible in the future when Florida Prestress adds more beds in this area.

## HENDRIX

### DRAGLINE BUCKETS

## PERFORATED OR SOLID

assure...

- Maximum Performance
- Greater Dependability
- Longer productive Life

HENDRIX MANUFACTURING CO., Inc.  
MANSFIELD, LOUISIANA

*"A Type for Every Digging Purpose"*  
1/4 to 40 Cubic Yards

For more facts, use Request Card at page 18 and circle No. 254



This Austin-Western hydraulic crane is moving forms right now, but the rig is used for plenty of other work in the yard—including moving jacks and strand reels.

#### Casting breakdown

The dozen casting beds at the prestress yard have the following capacities:

Number of rows	Length of rows	Type of component
5	150 feet	14-foot joists
5	150 feet	10-inch joists
4	400 feet	Type III girder
4	400 feet	Type II girder
3	400 feet	18-inch piling
3	400 feet	18-inch piling
1	400 feet	14-inch double-tee
5	300 feet	10, 12, 14-inch piling
1	280 feet	16-inch double-tee
1	280 feet	4-foot flat slab
1	280 feet	3-foot-wide, 4-inch-high roof slab
1	55 feet	utility bed for misc. forms

The company's prestress operations, headed by superintendent William T. Cooper, have continually expanded in the last few years because of the increase in prestressed components required on state projects. Florida has been pioneering the use of prestressed bridge members, and more and more of them are being specified in highway contracts. This is one of the prime reasons that many Florida contractors are studying prestressing operations and setting up their own plants. And as engineers and contractors become familiar with the techniques, the rest of the country will be following Florida's lead.

THE END

Toll-road revenue on the Massachusetts Turnpike hit the \$1 million mark in June. This is \$100,831 more than toll collections for the same month last year.

CONTRACTORS AND ENGINEERS



## New Jersey labor troubles subside at last as roofers come to terms

Work on building projects in Bergen County, N. J., resumed last month after an eight-week strike by Roofers Local 10 against members of the New Jersey Roofing Contractors Association.

The roofers were the last of several trades to come to terms, and the settlement marked the end of a turbulent period that saw walkouts at various times by carpenters, bricklayers, and laborers in the state's northern counties.

The roofers struck for a 40-cent wage raise in a one-year contract; they came back to work for 50 cents over a three-year period. Under the union's old agreement the journeyman scale averaged \$3.80.

## Pipe fitters and contractors in Houston area reach tentative agreement

A "memorandum of agreement" between Pipe Fitters Local 211 and contracting groups in the Houston area provided a 25-cents-hourly wage package over a two-year period. The remainder of the contract was suspended until reviewed by a joint session of attorneys for both the contractors and union groups.

The memorandum provided for a wage increase of 12½ cents hourly effective immediately, which brought the pipe fitters' rate to \$3.67½. Another 12½ cents an hour will become effective July 1, 1959. The contract will expire June 30, 1960.

No fringe benefits were involved in the new agreement, according to an employers' association spokesman, although there is a 2½-cents-hourly apprentice fund payment.

The new settlement with the Pipe Fitters may well set the pattern for the Galveston City area, and it will probably affect negotiating patterns in the southern Gulf Coast area as well, the spokesman for the employers' association said.

## Pennsylvania ironworkers get pension fund, hourly pay hike

A new two-year contract between Iron Workers Local 3 and the Iron Workers Employers Association of Western Pennsylvania established a pension fund for some 2,360 union members and raised their hourly pay 20 or 25 cents, retroactive to July 1.

Structural workers got the 20 cents, which brings their hourly scale to \$4; rodmen got the quarter and a new scale of \$3.82½. In addition, employers are paying 10 cents more hourly per man for pensions.

## Rule company not entitled to recover for wages increased under the Davis-Bacon Act

The United States Court of Claims ruled that the Bushman Construction Co. is not entitled to recover from the

United States the increased cost of wages resulting from a redetermination of prevailing minimum wages by the Secretary of Labor under the Davis-Bacon Act.

The decision turned on the point that the contract awarded to Bushman by the government contained a provision that proceedings were pending for a redetermination of Davis-Bacon rates for the area in which Bushman contracted to do the work required by the government. The work was part of the Missouri River Basin project. The provision said that any

new rates would become the applicable minimum for work performed thereafter under the specifications for the job.

Bushman argued that the Davis-Bacon Act requires only that the contractor should pay the minimum wages found by the Secretary to be prevailing in the community at or before the time of execution of the contract, and does not authorize a provision for the payment of a higher wage if the Secretary later determines that the higher wage then is prevailing.

The court agreed with this view of

the law, but added the following statement:

"From this premise, however, plaintiff draws the conclusion that any such provision in a contract is unlawful. This conclusion is wrong. It is wrong because the Davis-Bacon Act was not enacted for the benefit of the contractor, but for the benefit of the contractors' employees, to insure that they receive at least the standard wages prevailing in the community. . . . A violation of that Act, therefore, gave to the contractor no right of action. . . ."



Give Your Profits a Lift!

## Bring NOWness to Your Operations ...with ASSOCIATES Equipment Financing

The time to boost profits and get the edge on competition with new, cost-cutting, time-saving equipment is... NOW! By financing equipment replacements and additions as they're needed—leaving vital working funds untouched—you keep your business in a sound financial position... and improve your competitive position. Whether your interests would be best served by straight-line financing, or by one of several accelerated methods of equipment financing, Associates has a plan "finance-engineered" for your circumstances.

For flexible, personal service—with fast approvals and a minimum of red tape—finance through Associates. With a "grass roots" approach to financing, Associates can serve you on the local level through one of more than 200 branch offices. Ask your equipment dealer about Associates' financing plans, or send coupon today for "Money to Grow On". It's free!

**NOW**... expand and meet competitive situations by purchasing new equipment when it's needed.

**NOW**... benefit from the cost-saving advantages of new equipment... pay for it from additional profits.

**NOW**... make necessary additions and replacements without suddenly draining vital working funds.

**NOW**... take advantage of accelerated write-off methods of figuring depreciation in the financing of your equipment.

**NOW**... enjoy greater operating efficiency; reduce maintenance and operating costs by updating and upgrading equipment.

### SEND FOR YOUR FREE COPY TODAY!

"Money to Grow On" is a new forty page book which explains the "mechanics" of equipment financing, fixed asset loans, advances for special situations and other Associates financing services.



**Associates**  
DISCOUNT CORPORATION

Associates Building, South Bend 24, Indiana

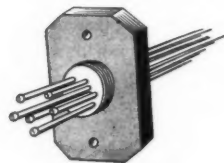
ASSOCIATES DISCOUNT CORPORATION  
Dept. 201A Associates Building, South Bend 24, Indiana  
☐ Please send my free copy of "Money to Grow On."  
☐ Please send information on Associates financing:  
Type of equipment \_\_\_\_\_  
Name \_\_\_\_\_  
Title \_\_\_\_\_ Company Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon, or Request Card at page 18 and circle No. 255



## Girders, 96 feet long, are post-tensioned for bowling alley roof

The skeleton of a 96-foot-long girder for the roof of the bowling alley in the Great Southwest Sports Center has ten cables strung between bulkheads of wood. Bulkheads are backed by steel angles. Tendons of each cable are wrapped in creosoted paper to keep them from bonding to the concrete.



**B**ig, even by Texas standards, are the 96-foot post-tensioned concrete girders that support the roof of a unique one-story building—the Great Southwest Sports Center in the Dallas-Fort Worth area.

In addition to the giant girders, the \$1 million bowling alley uses precast and prestressed concrete for the roof and exterior walls.

The walls are made up of vertical prestressed panels up to 24 feet in height. With a brush finish on the outside and a painted surface on the inside, the 5½-inch-thick panels form the completed wall. All roof members are of precast concrete. Spanning the 39 feet between the girders are concrete joists which support the 6½×2-foot roof channels.

The 32-lane bowling alley was recently completed by the Great Southwest Corp., Dallas, as the initial unit in a 293-acre Sports Center. This center is an integral part of a 5,000-acre industrial development located at about the mid-point of the Dallas-Fort Worth Turnpike.

In its comprehensive plan, Great Southwest Corp. not only provides companies with ideal plant sites but gives the expected 150,000 workers nearby places to shop, eat, and play. The industrial district will have three community centers with restaurants, office buildings, hotels and motels, drive-in shopping, and a chapel. Workers will live in neighboring towns. Industry in the district will be served by a million-square-foot warehouse—now under construction—and a consolidated motor freight terminal.

At the Great Southwest Sports Cen-



Mack 6-wheel dumpers pace the pavers on road-surfacing job. Used for a variety of heavy on- and off-highway hauling chores, these trucks, as well as Armour's other Macks, have set new performance records with...



Prestressed wall panels for the exterior walls are lifted with a four-point hookup and set in place. Panels have eight ¾-inch strands stressed to 14,000 pounds. Supplied and erected by Span, Inc., Dallas, they are 4 feet wide, 5½ inches thick, and up to 24 feet high.

## down time less than on

"Our contracts require us to take on all kinds of jobs, ranging from rock hauling to road surfacing to transfer of iron ore from ship to shore—and we require versatile trucks that enable us to complete these jobs swiftly and dependably.

"They're all tough requirements, but our 16 Macks have the stamina to handle these jobs... and they do it economically, with minimum maintenance, and less than one per cent down time,"

says Mr. John M. Reid, Treasurer, of Armour Excavating, Inc., of Philadelphia.

Armour is especially pleased with Mack's 20-speed transmission because it's built to give the best performance under all driving conditions, from city street to tough off-highway low-speed hauling.

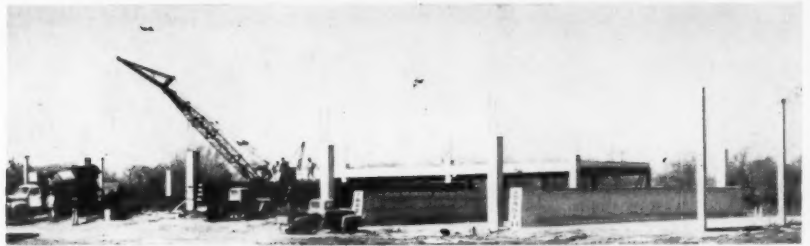
Macks have what you need for dependable, profitable operation in on- or off-highway construction—maneuverability and ease of handling for fast spot-

ting and  
payload  
mainten  
you can

Your  
glad to  
and the  
Inc., P  
Trucks



**Girders support precast-concrete joists,  
roof channels; prestressed panels are used  
for walls of unique building**



Girders are formed one at a time on the concrete floor adjacent to the columns. A water seal keeps them from bonding to the floor. Concrete is bucketed from a transit-mix truck to the girder form by a P&H crane.



Another of Armour's Macks dumping asphalt paving material. The combination of Mack's Balanced Bogie with Power Divider and the 20-speed transmission makes these trucks unexcelled for the roughest off-highway hauling, yet gives them the flexibility needed for open road operation.

ter, workers as well as the general public will be able to put their money back into circulation in a variety of painless ways. A worker will be able to bowl a few strings at any one of the 32 alleys and buy anything from tennis balls to a sports car in the 100,000-square-foot retail store soon to be built on the site. If a buyer wants to test his shotgun before buying it, he will be able to blast away on the nearby rifle range.

Other facilities for demonstrating and testing equipment will include casting ponds, a boat lake, and a skin-diving pool, plus skeet, pistol, and shotgun-patterning ranges. Name it and they've got it—a quail run, a moving deer target range, archery and driving ranges, and camping equipment areas.

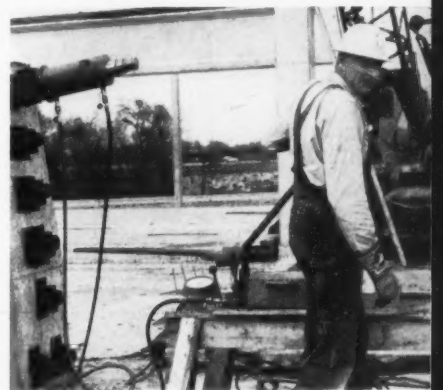
The center will also have a large area known as the Great Southwest Land, with miniature towns, Indian encampments, stagecoach routes, and other scenes depicting the history and heroes of the old Southwest. The park is Texas' answer to California's Disneyland.

But to the men working on the bowling alley, the place was hardly an amusement area. Before they could knock down any pins, they had to put up a big building.

#### **Big girders produced**

One of the biggest jobs was to manufacture and erect the post-tensioned concrete girders that span the width of the 98×269-foot bowling alley. The six girders were formed and poured one at a time on the concrete floor at the base of the columns.

*(Continued on next page)*



Post-tensioning is completed on this girder by a hydraulic ram. The bottom cables are stressed to 137,000 pounds. The rest, with 14 tendons, are stressed to 120,000 pounds. Steel plates hold the head of the cable out from the girder and maintain the tension.

**n one percent**

ting and dumping; the ability to haul maximum payloads with low operating costs; and only routine maintenance requirements—sensible reasons why you can't afford *not* to operate Macks!

Your nearest Mack branch or distributor will be glad to give you on-the-job performance figures and the names of Mack users near you. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

**MACK**  
**first name for**  
**TRUCKS**

For more facts, use Request Card at page 18 and circle No. 256



A Manitowoc 40-ton crane and a Lorain 35-ton crane team to lift a 64-ton girder into place on the columns. Ends of girders cover half the 2-foot-square tops of columns. A poured-in-place section will tie each column to the girder.

(Continued from preceding page)

Each I-shaped girder is 96 feet long, 6 feet 8 inches deep, and weighs 64 tons. One of the first steps in making a girder was the positioning of the ten cables to be tensioned. The cables, instead of being contained by flexible tubing, were wrapped with creosoted paper and cast in the concrete. The paper wrapping made it possible for the cables to be stretched after the concrete had set up.

Special forms at each end of the girder held the ends of the heavy cable in position. Built of wood backed by steel angles, the templatelike form

contained holes that positioned each cable end. All ten cables hung in an arc that dropped from 2 to 10 inches above the bottom of the girder at the mid-point. The lower pair of cables contained 16 tendons; the remainder contained 14. It was necessary to run cables from the tops of the end forms to concrete anchor blocks to hold the forms in place.

After setting the reinforcing steel, workmen set up 8-foot wooden form sections to enclose the sides of a girder. A 2x4 nailed to the concrete controlled the alignment, and snap ties held the forms together. The girder was kept from bonding to the slab by an application of Thompson's water seal. Only one set of forms was required to pour the six girders.

Since the nearly 7-foot-high girders were too high to pour directly from a transit-mix truck, concrete was bucketed to the forms by a P&H motor crane. After the 5,000-pound concrete was vibrated, it was allowed to cure for a minimum of five days.

In tensioning the cables, two hydraulic rams worked simultaneously to pull each end of the cable about 4 inches out from the concrete. When this was done, two steel plates were set in the gap to hold the tension. The 14-tendon cables were stressed to 120,000 pounds, while each of the two bottom 16-tendon cables was stressed to 137,000 pounds. The tensioning gave the big girders a camber of from  $\frac{3}{4}$  to  $\frac{7}{8}$  inch.

The cables as well as the tensioning equipment were furnished by The Prescon Corp. of Corpus Christi, Texas, which also assisted in the design of the girders. Responsible for the over-all design of the building are the Associated Architects & Planners of Dallas.

#### Lifting the 64-ton girders

When the big girders were ready to be lifted to the tops of the 15-foot-high columns, GSC called on the services of Watson Foundation Co. of Fort Worth. It rolled onto the scene with a Manitowoc 40-ton and a Lorain 35-ton motor crane.

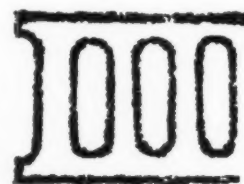
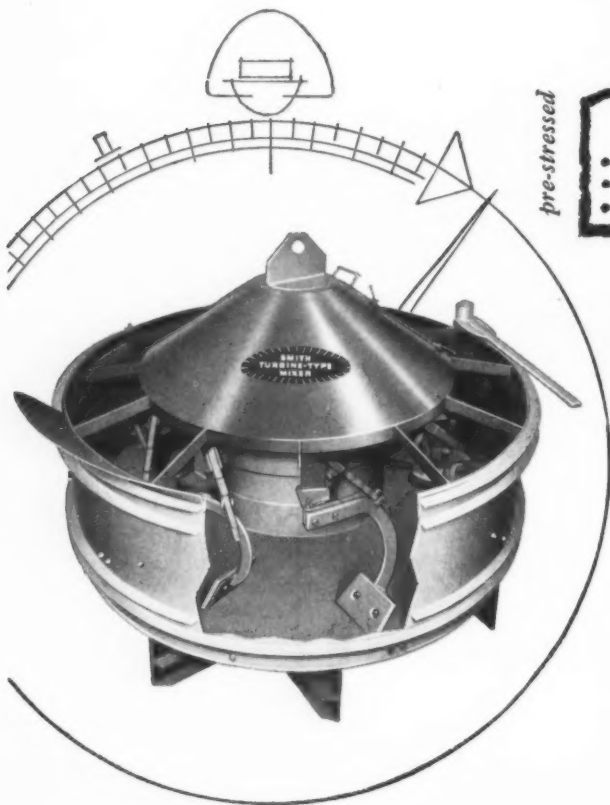
Grabbing onto lifting bolts in holes



Luther D. Clark, plant manager for the construction of the industrial district, uses the development plan of the Great Southwest Sports Center as he explains the physical layout.

CONTRACTORS AND ENGINEERS

## New Performance Standards FOR ALL THREE:



This is the phenomenal new mixer being talked about in dozens of industries — the mixer with an entirely different principle. "LIVE MIX" is the answer. Mixing is done in a doughnut-shaped drum. There is no "dead center" area. Blades set up a braiding action which breaks down centrifugal forces. As a result the Smith Turbine-Type Mixer mixes at a peripheral rate of six hundred feet per minute!

#### unbelievably fast

Regardless of your application, you can figure on a practical operating speed several times faster than conventional design mixers.

Besides tremendous speed, the new Smith gives your product a combination of three significant advantages

- |                     |                      |                   |
|---------------------|----------------------|-------------------|
| 1. Greater strength | 2. Better uniformity | 3. Higher density |
|---------------------|----------------------|-------------------|

Data is available for both heavyweight and lightweight concrete mixes. Write for details.



Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers.

**THE T. L. SMITH COMPANY • Milwaukee, Wisconsin • Lufkin, Texas**

Affiliated with Essick Manufacturing Company, Los Angeles, Calif.

AB-4043-1P

For more facts, use Request Card at page 18 and circle No. 257





**2-million yard earth-moving job.** In Spartanburg and Cherokee Counties, South Carolina, the P. C. Cochran Construction Company of York, S. C. contracted to improve Route 29. They moved over 2,000,000 cubic yards of earth in the process. Photo shows (left to right): Edley Lattimore, General Superintendent; P. C. Cochran, Owner, and H. H. Lane, Gulf Sales Engineer.

**ON YOUR NEXT JOB . . . LARGE OR SMALL . . . GO GULF! AND  
RIGHT NOW, USE THE COUPON BELOW FOR MORE INFORMATION**

**GULF OIL CORPORATION**

Department DM, Gulf Building  
Pittsburgh 30, Pa.

- ☐ Send copy of "Gulf and Your Business"
- ☐ Send copy of the new "Contractors' Guide" (equipment operation and maintenance manual)

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

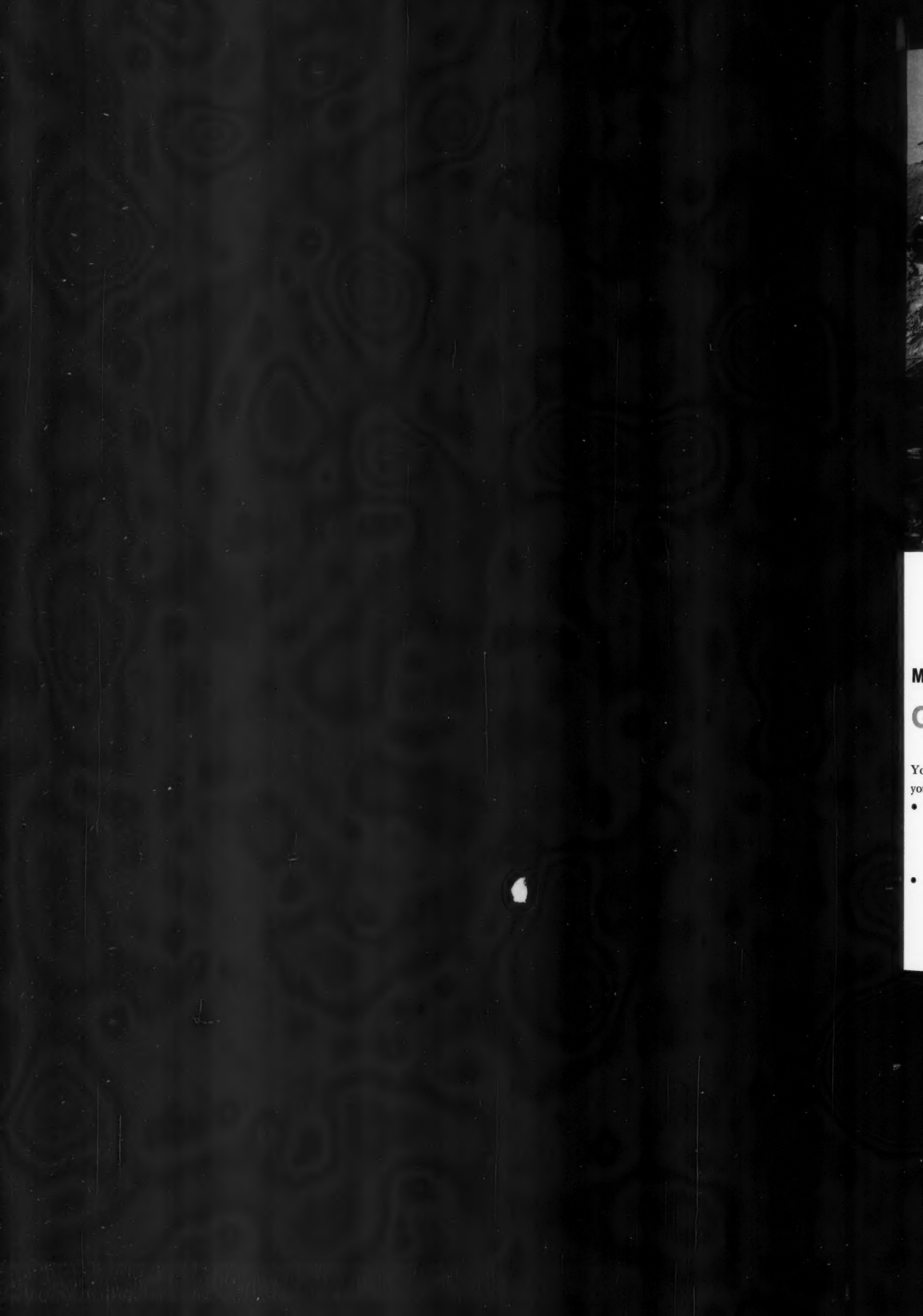
Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



**GULF MAKES THINGS RUN BETTER!**

SP 9296



M

C

Yo  
yo

•

•





Water barrier goes underground. When a creek obstructs a 3½-mile road project, move the creek! That's what S. Gavlik, Contractor, did to relocate Route 422 near Indiana, Pennsylvania. The project, let under the Federal Highway Program, included three sub-surface concrete structures to carry off surplus water from the creek. Photo above shows concrete being poured for one of the three sub-surface structures. S. Gavlik is a long-time Gulf user.

## Moving a creek . . . building a road . . . dredging a channel— GULF MAKES THINGS RUN BETTER!

You can better your operation three ways when you depend on Gulf for your fuels and lubricants.

- You're sure of prompt delivery. 1500 strategically located warehouses—in 32 states—provide an unfailing supply of the fuels and lubricants you need.
- Your Gulf Sales Engineer will be on the job to help your operating and maintenance men get

most efficient use of petroleum products. And he's backed by 1300 Gulf scientists and engineers at Gulf Research Center.

- Gulf quality fuels and lubricants insure best performance from your equipment—help you avoid mechanical delays. You'll have a smoother running job . . . and lower operating costs . . . because Gulf makes things run better.



**Re-routing a route.** One of the early jobs to be let under the Federal Highway Act was the relocation of Route 66 at Mamont, Pennsylvania. This job, which involved building an overpass over Route 80, was awarded to Ralph Myers Contracting Corporation of Pittsburgh. In the photo above are H. H. Hossler, Gulf Sales Representative, and Marion Hoke, Superintendent of Ralph Myers Contracting Corporation, on the job site. Myers depends on Gulf products to prevent mechanical delays.



**Digging the big ditch, underwater.** The South Cornwall Channel, a vital link in the \$900,000,000 St. Lawrence Power-Seaway Project, was dredged by S. J. Groves & Sons Company of New York City. Groves removed about 1,800,000 cubic yards. Tug and dragline used clean-burning Gulf diesel fuel.

**Expediting excavations.** Below: On the huge St. Lawrence Power-Seaway Project one of the many contractors who used Gulf products is the firm of Jack and Jim Maser, Excavators, of Lancaster, Pennsylvania. The photo below shows the late Charles Reynolds, Maser Project Superintendent, with Gulf Jobber John Pellegrino. Jack Nicholson, Gulf Sales Engineer, is at right.







wrence  
rs who  
ser, Ex-  
below  
Super-  
Nichol-



V  
O  
L  
S

S

XU



"We're extremely well satisfied with Gulf. Can't beat the products . . . or the service," says the job superintendent of S. Gavlik, Contractor, of Glenwillard, Pennsylvania. Standing above are (left to right): A. Tietjen, Superintendent; R. S. Garrison, Assistant Superintendent; H. H. Hossler, Gulf Representative; S. Gavlik, General Contractor.

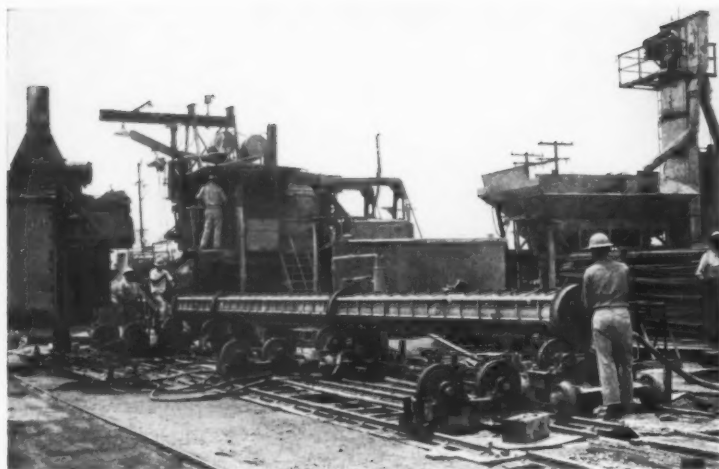
**Take it from leading contractors . . .**

**GULF MAKES THINGS RUN BETTER!**

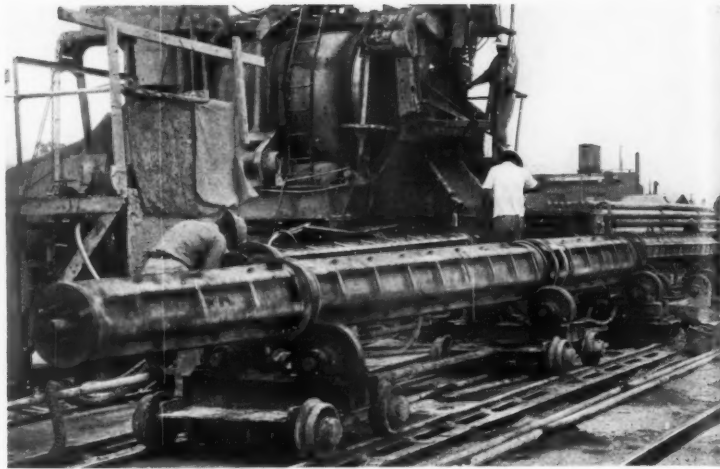








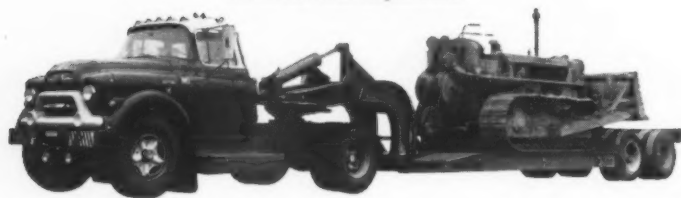
Concrete placement starts on a Spunpile. The form contains heavy reinforcing, with longitudinal rods in tension. The Johnson plant, right, discharges to the Koehring 34-E, and the mix is introduced into the hole in the center of the end cap.



When concrete is in the form and the intake pipe is closed, hydraulic motors on the roller spin the pile at high speed. Eight longitudinal reinforcing bars projecting out through the end of the cap are held in tension by nuts.

## TIME AND MONEY SAVERS... BY *Dorsey*

**Removable Gooseneck  
Model RG  
15 to 35-ton capacities**



Dorsey's patented hydraulic system makes one-man operation a practical reality, which means a driver can load and deliver self-propelled equipment without assistance.

A self-contained hydraulic power unit is now standard on the RG. It can be pulled by any tractor.

20" tires and full spring tandems are also standard, making RG ideal for highway operations as well as on rough terrain.

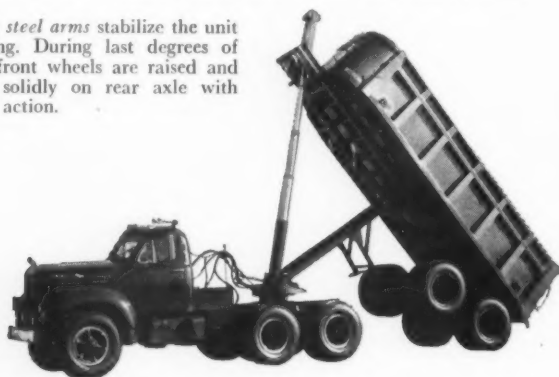
Deck can be raised or lowered while loaded and in transit to pass over or under obstructions.

### **New Dorsey HYDRAULIC DUMP TRAILER**

Frameless design adds thousands of pounds of payload capacity to the Dorsey Dump Trailer, and it's ruggedly built to stand up under the extra tonnage it can haul.

Heavy-duty telescopic hoist is placed at the extreme front to utilize the tilt principle instead of lift, reducing strain and wear on hoist and hydraulic system.

High-strength steel arms stabilize the unit when dumping. During last degrees of lift, tandem front wheels are raised and weight rests solidly on rear axle with springs out of action.



For the full details on any of Dorsey's complete line of heavy-duty trailers, call your Dorsey Low Bed Distributor or write direct.



**DORSEY TRAILERS  
ELBA, ALABAMA**

For more facts, use Request Card at page 18 and circle No. 260

## Prestressed-concrete pilepro

**Rigid form holds pretensioned reinforcing steel  
while concrete is placed by centrifugal process**

Using a centrifugal process for placing the concrete and a rigid steel form to hold the pretensioned reinforcing steel, Macco Corp., Paramount, Calif., is producing strong prestressed-concrete piles in which the concrete is unusually dense. Among the many projects on which these Macco Spunpiles have been used recently is the first increment of the subsidence remedial program at the Long Beach Naval Shipyard. (See "Remedial Works Protect Subsiding Navy Shipyard", C&E, August, 1958, page 32).

Macco Spunpiles are 16 inches in diameter, except for 20 feet at the tip, which tapers to 10 inches. A 3-foot section at the tip is solid concrete,

but the remainder of the pile has an 8-inch-diameter hole through the center. The piles are manufactured in lengths from 15 to 100 feet.

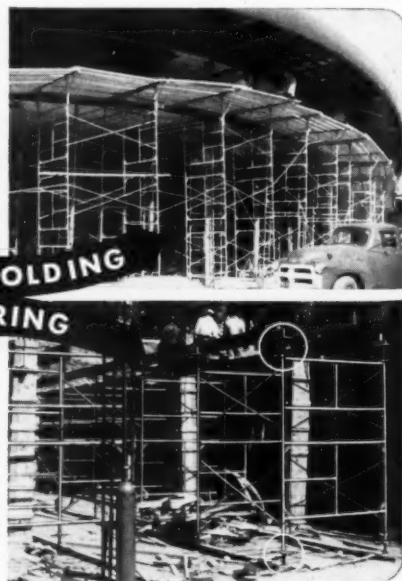
The unique feature in the manufacture of these piles is the heavily reinforced, rigid cylindrical form in which they are cast. The form is assembled in sections to make up the desired length of finished pile, and the reinforcing cage is inserted into the form.

The typical reinforcing consists of eight 5/8-inch longitudinal bars and a wrapping of No. 8 wire on a 3-inch pitch. A 1-foot section at each end is wound to a 1-inch pitch. The longitudinal bars extend out through heavy caps, which are placed over

## USE BIL-JAX TUBULAR STEEL SCAFFOLDING FOR BOTH SCAFFOLDING SHORING

**Get Versatility PLUS  
Speed and Safety . . . at low cost!**

Whether used for shoring or for scaffolding, Bil-Jax goes up fast . . . and stays put. No tools needed. Screw-jacks inserted in tubular steel legs make leveling easy. No need for heavy investment in two kinds of equipment, and no salvage loss. Ask for complete 24-page catalog. It's free.



For more facts, use Request Card at page 18 and circle No. 261

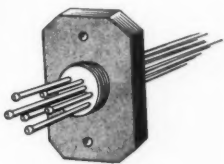
**CONTRACTORS AND ENGINEERS**





The centrifugal force set up by the spinning whirls the mix to the edges of the form and forces excess water to the center. The result is a very dense mix. Excess water is being drained out of a hole in the end cap.

## Spunpile produced by spinning



the ends of the cylindrical form.

Tension is then applied to the longitudinal rods by a jacking device, and they are locked in place with nuts which bear against the cap. A crane transfers the form to the casting bed.

Concrete is proportioned in a Johnson batch plant with a rolling weigh hopper. This discharges directly into the skip of a Koehring 34-E paver. The mix is introduced into the form through a hole in the center of the end cap.

The form rests on a series of powered rollers driven by hydraulic motors. As the concrete is introduced into the form, these motors begin rotating the form, and their speed

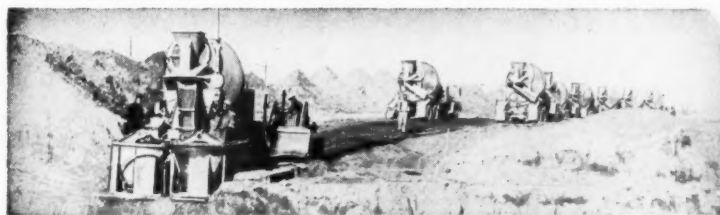
is increased until the concrete is spun into a hollow cylinder inside the form. The centrifugal placing method drives out the excess water and creates a very dense mix. This water, which collects in the center, is drained off when the spinning is completed.

After the concrete has attained sufficient strength, the jacking nuts on the steel are released and the form is removed. The concrete is cured with water or by a spraying with Hunt Process Clear curing compound.

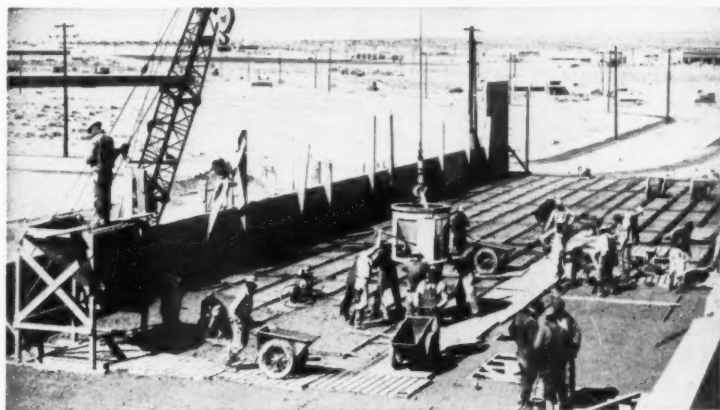
Even in lengths up to 100 feet, the finished piles—weighing about 150 pounds per linear foot—can be handled by a crane using a two-point pickup. **THE END**



A 100-foot-long Spunpile is picked for stockpiling by a truck crane that uses a two-point pickup and a very short strongback. These piles measure 16 inches in diameter, except for 20 feet at the tip, where they taper to 10 inches.



## Concrete job pays extra profits for careful planning of concrete handling



Concrete construction on this 300' x 600' airplane hangar required two types of concrete handling—(1) bulk handling for columns, foundation and 17" thick walls and (2) slower paced handling for thin finished floor slabs. The problem was—how to prevent delays and inefficiencies in one or both placement jobs.

The answer here was to divide the work and use two separate crews and two concrete handling methods simultaneously.

First, two Gar-Bro Buckets per crane were used for the bulk placing. While one bucket was being filled, the other was placing concrete. Thus with a minimum crew, a fast pace was maintained.

Second, Gar-Bro Floor Hoppers and a fleet of Concrete Carts supplied the slab work. The concrete buckets load the floor hoppers for cart charging and alternate for direct column pouring, thus holding the balance of the operation.

In this way there were no delays and no interruptions of work. A steady delivery of concrete by ready mix trucks provided maximum efficiency.

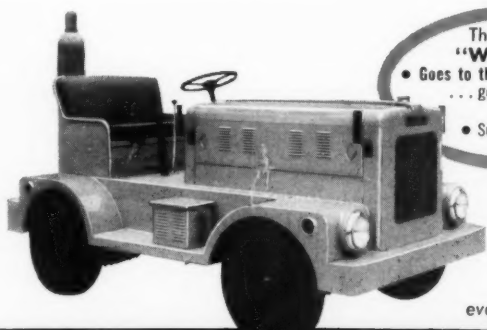
Since every wasted minute costs money on a concrete job and delays cost more than equipment, it pays to plan each job properly. Many similar innovations are described in the regular issues of Gar-Bro Concrete News and the Gar-Bro Concrete Manual, available on request.

**GAR-BRO MANUFACTURING CO.**  
Los Angeles, California • Peoria, Illinois  
General Offices:  
2415 East Washington Blvd.  
Los Angeles 21, California



**GAR-BRO** The world's most complete line of  
**CONCRETE HANDLING EQUIPMENT**

For more facts, use Request Card at page 18 and circle No. 263



- The HOBART "WELDMOBILE"**
- Goes to the job under its own power ... gets the job done fast
  - WELDS
  - Supplies 110 volt D.C. current

You can depend on this HOBART self-propelled DC arc weldmobile every time, everywhere—at any hour

## When you have to... "GET THE JOB DONE YESTERDAY!"

Be prepared to get a wide variety of jobs under way as soon as they develop. The "Weldmobile" is capable of quickly taking a welding operator with his essential equipment to any job without any delay. Its powerful Chrysler engine is coupled directly to the Hobart-built generator, which furnishes power for welding, or 1 KW DC auxiliary power to operate lights, tools, pumps, saws, motors, etc. Special traction and chassis

features enable the "Weldmobile" to travel rough terrain and into places inaccessible to ordinary type chassis.

Send for complete details—discover how this Hobart will help you "get the job done yesterday." Hobart Brothers Co., Box 889, Troy, Ohio, Phone FE 21223. "Manufacturers of the world's most complete line of arc welding equipment."

Save hundreds of dollars doing construction, maintenance and repair welding with these lightweight portable models.



HOBART BROTHERS CO., BOX 889, TROY, OHIO  
Without obligation, send me complete information on:

\_\_\_\_\_ amp. capacity ☐ **FREE**  
☐ "Weldmobile" ☐ Gas Drive Welder's  
☐ AC Welder, AC Power ☐ Husky Boy Vest Pocket Guide

Name \_\_\_\_\_

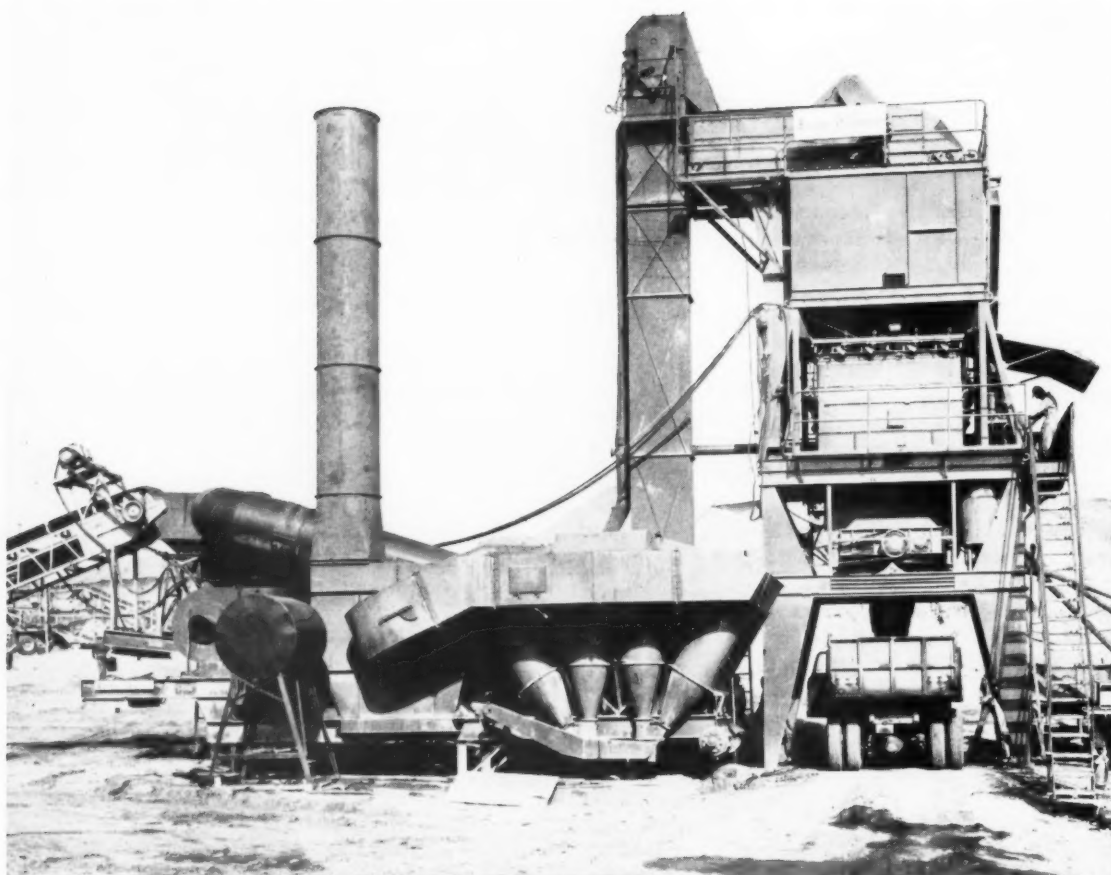
Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon, or Request Card at page 18 and circle No. 262

# Headaches came boulder-size on this grading job

Broken rock is loaded to a Euclid end-dump by a Northwest shovel. Boulders like these were encountered all through the 6.4-mile section. The larger ones will be drilled and shot to reduce them to a size for handling.



San Ore Construction Company's 6000-pound Barber-Greene Model 896 BatchOmatic, which has been set up at four widely scattered job-sites. Write for your copy of clearly illustrated *Principles of the BatchOmatic*.

## Fast, low-cost moving... another BatchOmatic advantage

In its relatively short life this 6000-pound Barber-Greene BatchOmatic has worked on four widely scattered paving jobs. The fact that San Ore Construction Company could move this plant over the highway for these jobs is proof of the superior portability of the BatchOmatic.

The plant was initially set up at Caldwell, Kansas, where it produced mix for Sections 1 and 2 of the Kansas Turnpike. It was then moved about 200 miles to Ellsworth, Kansas, for another road project. The next and longest hop was about 500 miles to Fairplay, Colorado, for paving the upstream face of Montgomery Dam, a job that totaled only 20,000 tons. Its final move of the season was about

100 miles to Fountain, Colorado, for a highway resurfacing project.

Besides their unmatched portability, Barber-Greene BatchOmatics offer:

- Simultaneous measuring of all sizes of aggregate.
- Instant changeover from automatic to manual operation, and from manual to automatic.
- New Dyna-Mix Pugmill which gives thorough coating in less time than any other pugmill.
- Instant, positive inspection of aggregate gradation and weight.

Write for information on the world's most modern asphalt paving equipment.

58-3-AL

**Barber-Greene**

AURORA, ILLINOIS, U.S.A.



CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 264

**Boulders**—ranging from the size of a baseball to bigger than a house—were the most troublesome factor in the grading of a 6.4-mile section of U. S. 16 on a completely new alignment through Ten Sleep Canyon in north central Wyoming.

This \$695,000 Bureau of Public Roads contract with Eagle Construction Co., Inc., Boise, Idaho, covered the final phase in the job of cutting a new road through the most rugged part of Ten Sleep Canyon in the Big-horn National Forest.

The boulders had fallen from the canyon walls or been washed down over the centuries during which the canyon was being carved out by Ten Sleep Creek, which is a far cry from the lazy brook its name might indicate. Some boulders lay completely on the surface; some were buried. Still others were partly exposed.

When a scraper or dozer started working on one of the partly exposed stones, there was no telling how large it might turn out to be. Some were small enough to be easily loaded by the International TD-24 tractors pulling 16-yard Wooldridge and LeTourneau-Westinghouse scrapers. Others somewhat larger could be pushed and rolled out of the way by one of the four TD-24 tractor-dozers in the spread.

Other boulders, which just peeked out of the soil, turned out to be as big as houses when they were uncovered. These had to be drilled and shot to break them down into pieces which could be handled. In still other cases, what looked like just another boulder would turn out to be a solid rock outcropping. These latter situations were turned over to a crew equipped for rock excavation.

### Rough on tractors

The big tractors literally clawed their way over the rocky ground. Working on steep grades in the maze of hidden boulders, and on a foundation consisting of a little dirt mixed with many rocks, it seemed that the tracks would be literally torn off the machines each time a blade hit a concealed rock. Actually, track wear was the biggest maintenance problem. The contractor found that by the time the grousers were worn down enough to need replacing or building up, the tracks were usually in such bad shape that it was most economical to replace the complete tracks.

CONTRACTORS AND ENGINEERS





An International TD-24 tractor push-loads a LeTourneau-Westinghouse scraper being pulled by another TD-24. The pusher has a Bucyrus-Erie dozer blade and an Ateco ripper.



A Euclid end-dump deposits material for a fill over a culvert. An Ingersoll-Rand 315-cfm Gyro-Flo compressor (right) supplies air for an I-R pneumatic tamper being used to compact the fill.

Winding up the south wall of the canyon, the old highway has several switchbacks with very sharp curves, and its variable grade is quite steep in some sections. Rather than try to rework this alignment and fight traffic throughout the reconstruction, the BPR engineers chose a bold new alignment following the opposite side of the canyon.

This new alignment follows the canyon wall much of the way. Near the center of the section there is one big switchback on which the grade is flattened to 4 per cent. The rest of the way, the grade is a straight 6 per cent. From Ten Sleep, Wyo., at the west end of the canyon, this highway climbs more than 4,000 feet to cross the Big Horn Mountains through Powder River Pass, whose summit is 9,666 feet above sea level. Nearly 1,900 feet of the climb lies within the 6.4 miles of Eagle's grading contract.

The roadway section is graded to a 30-foot-wide top with 1½ to 1 slopes where conditions permit. The grading contract included the production and placing of 28,000 tons of minus 2-inch crushed-rock subbase material put down in a single 4-inch course. A 4-inch-thick base course and 2-inch bituminous pavement were to be constructed under a future contract.

Other items in the grading contract were the excavation of 727,000 cubic yards of unclassified excavation and the placing of 4,126 linear feet of corrugated-metal-pipe culvert in sizes ranging from 24 to 54 inches in diameter. Near the upper end of the job, the road crosses the canyon on a bridge being built under a separate contract.

#### Scrapers handle dirt

Starting the project in February, 1957, Nick Shaver, superintendent for Eagle Construction Co., sent his powerful TD-24 tractor-dozers ahead to pioneer an access road. Up to this time, practically every foot of the 6-mile job was inaccessible to any equipment. These tractors were equipped with Bucyrus-Erie dozers, and two of them carried rear-mounted Ateco rippers.

The dozers first pioneered a road wherever they could get through; then, they came back to start the top of each cut and the bottom of each fill. Because of the many boulders which could be expected to roll

(Continued on next page)



NOW...  
from  
Laclede

## 7 WIRE STRAND

for  
prestressed  
concrete



**LACLEDE STEEL COMPANY**

GENERAL OFFICES St. Louis, Missouri

DISTRICT OFFICES

Chicago, Illinois

Dallas, Texas

Detroit, Michigan

Houston, Texas

Kansas City, Missouri

Memphis, Tennessee

Moline, Illinois

New Orleans, Louisiana

Tampa, Florida

For more facts, use Request Card at page 18 and circle No. 265

(Continued from preceding page)

down the fills, it was also necessary to build a catch road along the toe of each fill.

Then the tractors came back, picked up three scrapers, and began the tedious task of hacking out the cuts and building the fills. Two of the scrapers were LeTourneau-Westinghouse rigs while the third was a Wooldridge. Pushed by TD-24 tractors, the scrapers picked up what dirt and rocks they could get and carried them to the fills. The other tractors with their dozers and rippers chewed away at the rocks which the scrapers couldn't move.

When one of the very large boulders was uncovered, a drilling crew moved in with Ingersoll-Rand jackhammers powered by an I-R 125-cfm Gyro-Flo compressor. The holes were loaded with Olin 40 per cent special dynamite to shatter the boulders into pieces small enough to be handled.

Compacting this rough material in the fills was almost as tough a job as getting it there. Two International TD-14 tractors and a Caterpillar D6 with sheepsfoot rollers worked the fills continuously. With the heavy tractors and scrapers, this provided adequate compaction.

Since it was impossible for a water truck to operate on the fills, the water required for compaction was applied with hand-held hoses. A Rex 4-inch pump drafted from deep holes in the creek and pumped the water through a line of 4-inch aluminum irrigation pipe to the fill locations. Here a workman with a hose and nozzle played a stream of water over the fill material as it was dumped and spread.

#### Rock excavation

Solid rock was drilled and blasted and loaded by a Northwest shovel. The drilling crew used an Ingersoll-Rand wagon drill powered by an I-R 315-cfm Gyro-Flo compressor, and the holes were loaded with Olin 40 per cent special dynamite. The shot rock was hauled to the fills in two Euclid end-dumps.

Placing the 4,100 linear feet of corrugated-metal-pipe culverts and compacting the fill around them was another hard job. First of all, it was difficult to dig the trenches through the boulder-laden ground. Then it was a slow hand operation to sort out enough rock-free dirt to bed the pipes and backfill around them. The backfill was tamped with an Ingersoll-Rand pneumatic tamper powered by an I-R compressor.

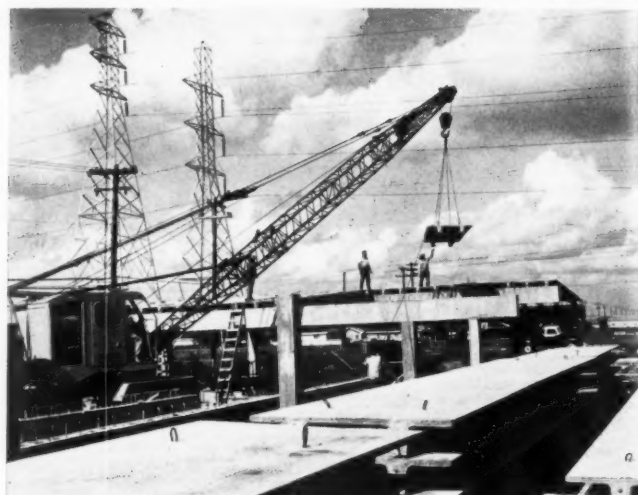
#### Personnel

Representing the Bureau of Public Roads on the project were Fred Soltero, project engineer; Roland Lacy, assistant project engineer; and Philip Dowlin, inspector. Eagle's supervisory staff, in addition to Shaver, included James Humphries, tractor foreman, and Ivan Treet, shovel foreman.

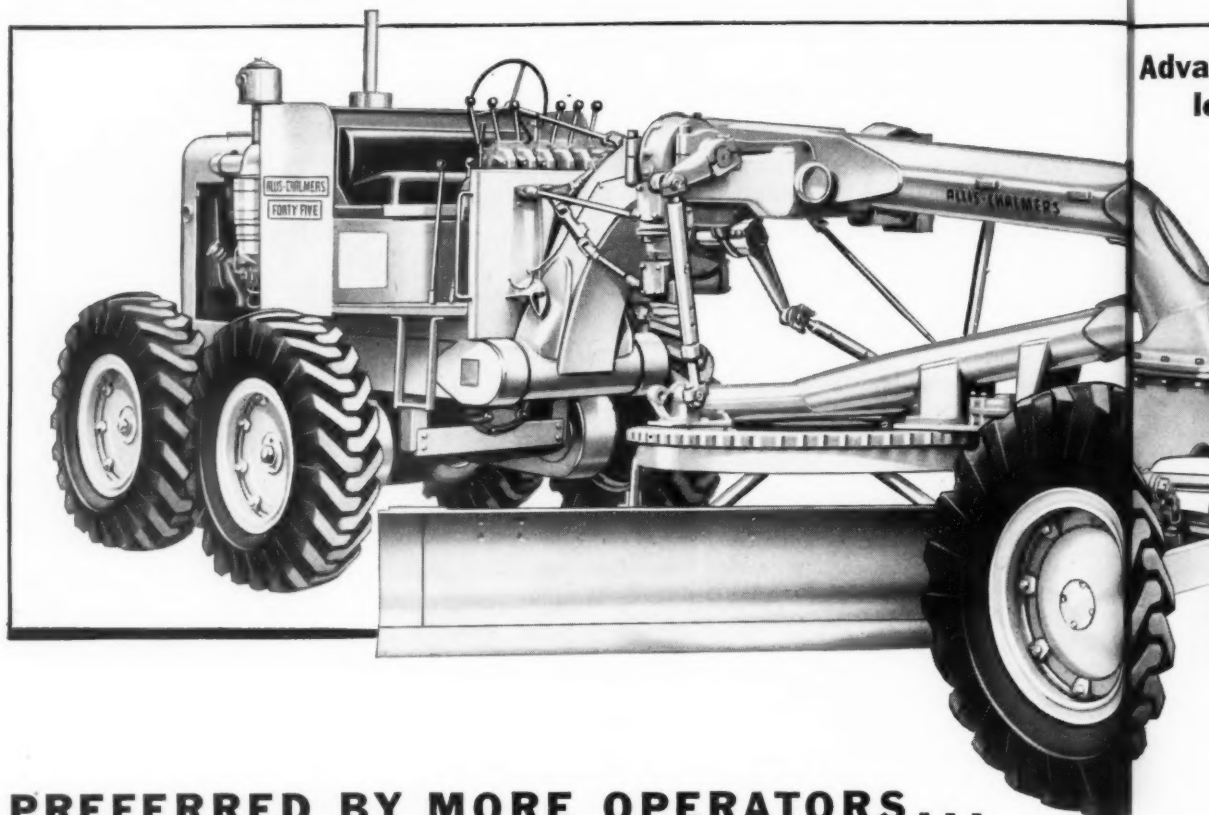
THE END

The Montana Highway Commission awarded a total of \$8,135,110.41 in road contracts in July, an all-time monthly high for the state.

A POST-TENSIONED double-tee deck span is being lowered into place by an American Model 375 truck crane for a Houston, Texas, community shopping center. Pozzolite admixture was used instead of steam curing for the spans and beams. The lightweight aggregate in the spans had a 10-day minimum strength of 3,500 psi. The 5-foot-wide 30-foot-long deck spans and the 50-foot-long beams, cast at the job site by Stresdek Bldgs., Inc., were post-tensioned by the Prescon System.



## For consistently tough jobs, compare Allis with any other heavy-duty motor grader



### PREFERRED BY MORE OPERATORS... BOUGHT BY MORE USERS EVERY DAY

The FORTY FIVE has the power, weight, traction and speeds you need for high-production grading. Superior stability and precision control give you deep precision cuts or smooth finishes. The FORTY FIVE is built to take the shocks and strains of heavy-duty service — and to keep production steady. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead...move ahead  
...and stay ahead with

**ALLIS-CHALMERS**



CONTRACTORS AND ENGINEERS



## Manufacturer memos

Walter E. Schirmer and Martin E. Graham have been elected president, and vice president and general manager, respectively, of **Clark Equipment International, C. A.**, a wholly owned subsidiary of Clark Equipment Co., Buchanan, Mich. Schirmer, a Clark executive for 21 years, has headed the firm's legal department, has been sales manager of the Industrial Truck Division and, since 1947, has been a vice president of the parent firm.

Graham formerly managed the Industrial Truck Division of Clark In-



Walter E. Schirmer, president, and Martin E. Graham, vice president and general manager, Clark Equipment International, C. A.



ternational.

The Construction Machinery Division of **Clark Equipment Co.** has appointed **Dan B. Daily** a district representative for Wisconsin, the Upper Peninsula of Michigan, Minnesota, North Dakota, and Manitoba and western Ontario, Canada. He will headquarter in Lakeville, Minn.

**Philip E. Cunningham** has been appointed new product manager for the excavator line produced by the **Koehring Division**, Koehring Co., Milwaukee, Wis. Before his appointment he

Philip E. Cunningham, new product manager for the excavator line of Koehring Division.



was with a construction-machinery distributor in Wisconsin.

The firm also named **Edward R. Gee** district representative for the northeastern part of the country. He, too, was formerly with a construction-machinery distributor.



Russell E. Story, manager of Bucyrus-Erie Co. of Canada, Ltd.

**Russell E. Story** has been named manager of **Bucyrus-Erie Co. of Canada, Ltd.**, Guelph, Ontario, a subsidiary of Bucyrus-Erie Co., South Milwaukee, Wis. Story was manager of B-E's Chicago works from September, 1956, until its closing earlier this year. Since then he has been assistant to the manufacturing manager at the home office.

The new sales promotion manager for the company is **Charles Parthum**. He was formerly director of public relations, sales promotion, and advertising for Harnischfeger Corp., Milwaukee.



John Mullenmaster, vice president and director of sales for the Owatonna Tool Co.

The **Owatonna Tool Co.**, Owatonna, Minn., has elected **John Mullenmaster** vice president and director of sales. He was formerly industrial sales manager.

The firm has created two new territorial sales divisions. The eastern sales division is headed by **Robert Allyn**, who was sales manager in charge of distributor sales. **William Murray**, former assistant sales manager, heads the western sales division.

The **Florida Division**, Food Machinery & Chemical Corp., Lakeland, Fla., has appointed **Anthony J. Abruzzo** Form-Crete sales engineer for the

Anthony J. Abruzzo, sales engineer for the Florida Division, Food Machinery & Chemical Corp.



northeastern territory. From headquarters in Bethpage, Long Island, N. Y., Abruzzo will cover New York, the New England states, and eastern Ontario and Quebec Province, Canada.

**Gordon P. Smith** has been elected director of traffic for **The Colorado Fuel & Iron Corp.**, New York City, and will be headquartered at the firm's



Gordon P. Smith, director of traffic for The Colorado Fuel & Iron Corp.

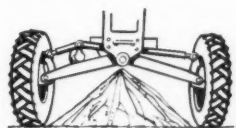
plant in Claymont, Del.

Smith was formerly general traffic manager of the company's Eastern Division.

## Allis-Chalmers FORTY FIVE performance

- 120 brake hp
- 6 forward speeds to 20.6 mph
- 3 reverse speeds to 7.0 mph
- 23,800 lb approx.

Advantages that mean more production... less maintenance... easier and better operation



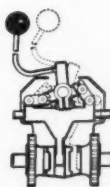
Extra high axle and throat clearance means bigger loads at the blade.



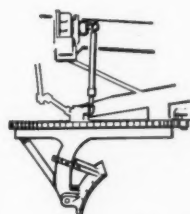
The **ROLL-AWAY** moldboard rolls dirt, gives more performance per horsepower, more production per gallon.



Fully enclosed power steering — easy control under all conditions.

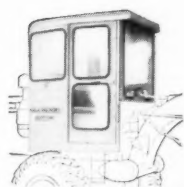


Toggle-type controls are exclusive with Allis-Chalmers.

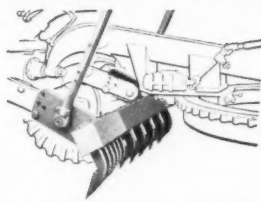


Front-mounted lift casing eliminates long shafts that twist under loads.

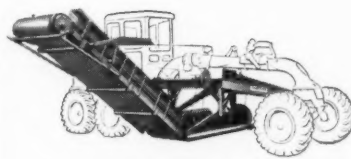
Matched attachments and accessories make it a year-round producer



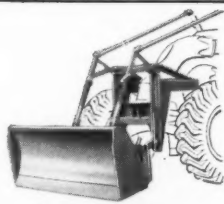
All-steel, stand-up cab



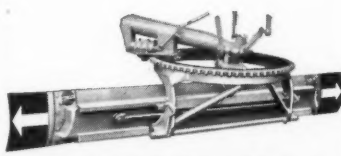
11-tooth, V-type scarifier



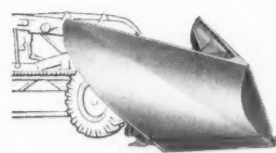
Hancock elevator



8-foot bulldozer



Hydraulic, shiftable moldboard



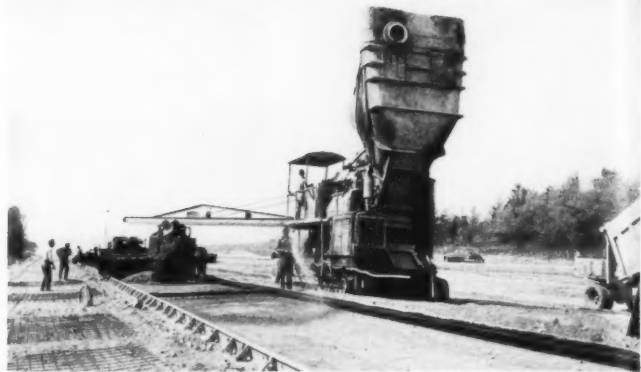
V-type snowplow

ROLL-AWAY is an Allis-Chalmers trademark.

For more facts, use Request Card at page 18 and circle No. 266

# Mechanized paving spread spurs interstate project

Contractor puts down concrete slab at good pace with fast-moving, smooth-running equipment fleet



Leading the paving train is this Blaw-Knox Multifoot 34-E paver, here lifting its skip to charge the mixer. A workman wets the subgrade ahead of the concrete placing.

An average of 2,200 linear feet of 12-foot-wide concrete slab per 9-hour day, using only one paver, was the pace maintained on the outside lanes of a 6½-mile project last season by an Ohio contractor.

A completely mechanized, smooth-running spread enabled Fischer Construction Co., Cincinnati, to hit this healthy stride on a \$3,104,000 contract, part of the relocation of U. S. 40 between Englewood and Vandalia, Ohio. U. S. 40 is undergoing a face lifting throughout Ohio, and many sections are being relocated to bring this important east-west artery up to interstate standards.

## Form-trench cut

Beginning with the preparation of the form trench, the contractor used a Cleveland Formgrader to cut and compact the 12-inch-wide 1-inch-deep trench in the subgrade. This left the subgrade 1 inch higher than the base of the forms to permit the subgrader to level it off between the set forms. Fischer had about 12,000 linear feet of Blaw-Knox 9-inch steel forms on the job. The forms were placed and moved by a Quick-Way truck crane.

After positioning of the form sections in the prepared trench, a Le Roi Tractair self-propelled air compressor was used to power a Thor air hammer for driving the form stakes. The contractor always kept about 2,900 linear feet of forms set ahead of the paver during the paving of the outside 12-foot roadway lanes, which were completed first. Then, by doubling the paving spread and using the same single form crew, he could set over 4,500 linear feet of single line forms to complete the inside 12-foot lanes.

Fischer found paving of just the inside lanes with the two pavers more economical because it did not require a double form-setting crew. If two pavers had been used for the outside lanes, requiring a double line of forms, two crews would have been required to maintain the distance ahead of the pavers.

A Blaw-Knox subgrader, riding on the forms, prepared the final subgrade between the forms. This rig, which pulled itself along by means of two cables attached to the form stakes, also pulled a planer which smoothed the subgrade. The subgrade was then compacted by a Buffalo-



Lifting heavy beams for steel-skeletoned skyscrapers, over the heads of pedestrian and vehicular traffic, calls for careful loading — with safe slings, stout wire rope and a crane that's securely guyed with steel cables. Structural steelworkers practice safety because they know that...

## Life depends on it

Today, taller buildings, bigger bridges, deeper oil wells, greater construction projects require stronger, safer wire rope. And equipment operators know that when you buy "bargain" rope you're heading for headaches, trouble and expense. So don't bargain with safety. Buy wire rope on the basis of *quality*. Buy Wickwire Rope.



LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION  
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver  
El Paso • Farmington (N.M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City  
Phoenix • Pueblo • Salt Lake City • Tulsa • Wichita • PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland  
San Francisco • San Leandro • Seattle • Spokane • WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga  
Chicago • Detroit • Emmenton (Pa.) • New Orleans • New York • Philadelphia

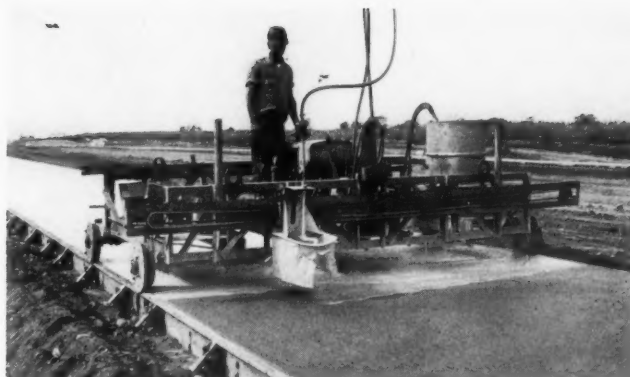
For more facts, use Request Card at page 18 and circle No. 267

5696





Working behind a Blaw-Knox spreader are this Jaeger double-screed transverse finisher and a Koehring longitudinal floating machine. Hand crews will touch up the slab surface behind these rigs.



Bringing up the rear of the paving train, this Heltzel Flex-Plane machine sprays Hunt's white-pigmented curing compound over the slab surface. Forms will be stripped the following day.

Springfield 5-ton tandem roller equipped with a scratch board to check the crown and cross section of the subgrade.

Transverse joints, formed by a  $\frac{1}{8}$ -inch-thick metal divider supported in a Bethlehem Steel basket, were positioned by the form crew on 60-foot centers. The steel basket also supported twelve 1-inch-diameter steel dowels, 18 inches long, spaced on 12-inch centers between the forms. Removable metal caps were placed over the joint dividers to permit continuous paving over the joints. A Kohler generator, mounted in a truck trailer, powered the electric wrenches used to secure the hook bolts to the side forms.

#### Paving train

Leading off the paving train was a Blaw-Knox Multifoot 34-E paver, riding along the outside of the forms and placing concrete batches in front of a Blaw-Knox spreader. The paver was supplied with water by a 2,500-gallon tanker. This tanker, pulled by the paver, was kept full by a 4,000-gallon tanker which hauled water from a nearby creek. Here an overhead tank was pumped full from the creek, allowing the trucks to be charged by gravity flow.

The spreader, equipped with two rear-mounted Jackson vibrators which were pulled through the concrete near the forms, made an initial pass to trim the mix to a  $6\frac{1}{2}$ -inch depth, after which workmen placed the welded-wire reinforcing at the correct slab depth.

The paver and spreader then backed up over the wire mesh to place additional concrete batches over the reinforcing, thus completing the 9-inch slab thickness.

Following the spreader was a Jaeger double-screed transverse finisher and a Koehring longitudinal floating machine. The metal cap covering the transverse joint fillers, was then removed to permit the hand-finishing crew to dress the joint. This crew used wood and aluminum straight-edges to complete the slab surface. Bringing up the rear was a Heltzel Flex-Plane machine spraying Hunt's white-pigmented curing compound across the slab as it rode the forms.

Forms were stripped the following day by removing the form stakes with an Urschel air-operated pin puller

(Continued on next page)



## You can't beat a

### ROLL-O-MATIC

Write today for literature

**THE GALION IRON WORKS & MFG. CO.**

General and Export Offices—Galion, Ohio, U.S.A.

**GALION**  
ESTABLISHED 1907



## MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 268



A Cleveland Formgrader cuts the 12-inch-wide 1-inch-deep trench for the form sections. The string line positioned along the inside 12-foot lane serves as a guide for the operator.

(Continued from preceding page)

and picking up the sections with the Quick-Way crane. They were loaded on a truck and moved ahead of the paving spread to be repositioned.

#### Paving inside lane

Fischer used an additional Multi-foot single-drum paver to place the concrete for the inside lane, thus increasing daily footage poured without increasing the form-setting crew. The second paving spread included a Jaeger spreader, a Heltzel transverse finisher, and a Koehring longitudinal floating machine. This doubling of the paving spread resulted in an average daily production of about 4,500 linear feet.

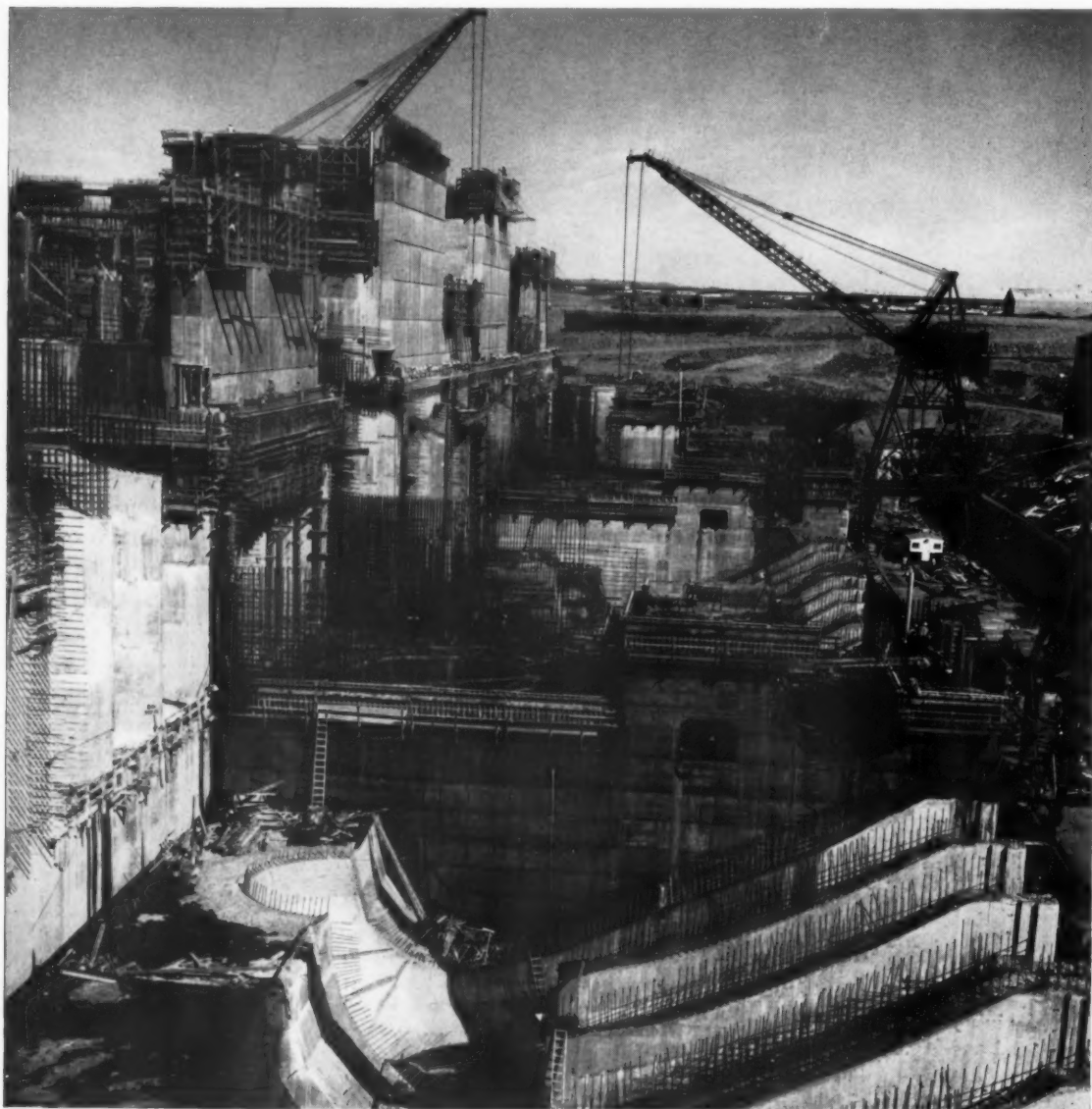
#### Batch plant

Supplying the concrete mix to the pavers was an Erie Strayer batch plant located about midway on the job. It consisted of an Erie three-compartment, 100-ton aggregate bin, equipped with a Howe scale and manual controls; two 700-barrel cement silos, and one 450-barrel cement bin.

The aggregate bin was charged, from three stockpiles, by a Lima 802 crane equipped with a 2-yard re-handling bucket. The stockpiles of No. 3 and No. 4 stone, and sand, were



This Erie Strayer cement batching setup includes a 450-barrel bin and two 700-barrel silos, charged by a 75-foot-high enclosed bucket elevator. The Worthington air compressor at right supplies air to the plant.



**Forging Ahead at Priest Rapids.** This photograph shows construction work on the 1025-ft powerhouse at Priest Rapids Dam, a four-year building project that started in July, '56. Tremendous progress has already been made. Both the Public Utility District of Grant County, Wash., and the Northwest Power Pool can soon look forward to vast new supplies of electric power. Ten generators with a total rating of 788,500 kw will be installed in the powerhouse.

Enormous loads of materials are handled each day as construction proceeds. Cranes and other equipment require great quantities of wire rope, and Bethlehem is furnishing virtually all of it. The rope is supplied in the Purple Strand (improved plow) grade, which has the toughness and strength for any demands imposed upon it.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:  
CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

For more facts, use Request Card at page 18 and circle No. 269



wetted down at a rate of 4,000 gallons per pile during the evening after the plant was shut down. This was done during the summer months to maintain the correct moisture content in the aggregates.

Sand and stone were delivered to the plant site by truck, as was the cement. Cement was charged into the silos and bin through a hopper, screw conveyor, and a 75-foot enclosed bucket elevator.

Electric power was supplied to the plant by a Westinghouse generator driven by a Buda diesel engine. A Worthington air compressor, located on the ground, supplied air to the cement-bin batch gates.

#### Personnel

Howard Fischer was project manager and George Hines, superintendent, for Fischer Construction. They kept in constant touch with all phases of the job by means of General Electric mobile radios and base station. Fred E. McCormick was project engineer for the Ohio Department of Highways.

THE END

#### Public works chief named

Charles V. Smith has been appointed commissioner of public works for Nassau County, N. Y., to succeed the retired John C. Guilbert. Smith, a licensed professional engineer and land surveyor in New York State, was formerly senior deputy commissioner.

CONTRACTORS AND ENGINEERS



## Convention calendar

### September 15-20 International Congress on Large Dams

Sixth Congress, Statler-Hilton Hotel, New York City. U. S. Committee on Large Dams, International Commission on Large Dams, 29 W. 39th St., New York 18, N. Y.

### September 17-18 Building Research Institute

Conference, Sheraton-Park Hotel, Washington, D. C. Harold Horowitz, technical secretary, BRI, National Academy of Sciences, 2101 Constitution Ave., Washington 25, D. C.

### September 17-19 Producers' Council

Thirty-seventh Annual Convention, Dupont Plaza Hotel, Miami, Fla. PC, 2029 K St. N. W., Washington 6, D. C.

### September 20-26 American Society of Sanitary Engineering

Annual Meeting, Claridge Hotel, Atlantic City, N. J. James V. Crosta, chairman, ASSE, 68 Fairmount Terrace, East Orange, N. J.

### September 21-25 Prestressed Concrete Institute

Fourth Annual Meeting and Convention, Edgewater Beach Hotel, Chicago, Ill. PCI, General Arrangement Committee, Box 391, La Grange, Ill.

### September 22-24 Associated General Contractors of America

Mid-Year Board Meeting, Atlantic Biltmore Hotel, Atlanta, Ga. James D. Marshall, executive director, AGC, 20th and E Streets N. W., Washington, D. C.

### September 22-24 The Material Handling Institute, Inc.

Fall Meeting, The Greenbrier, White Sulphur Springs, W. Va. Meeting also held with the Industrial Truck Association, Monorail Manufacturers Association, and Association of Lift Truck and Portable Elevator Manufacturers. L. West Shea, managing director, MHI, One Gateway Center, Pittsburgh 22, Pa.

### September 28-October 1 American Public Works Association

1958 Public Works Congress and Equipment Show, Municipal Auditorium and Hotel Muehlebach, Kansas City, Mo. D. F. Herriek, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

### September 29-October 2 New York State County Highway Superintendents Association

Joint Meeting with County and Local Roads Division of American Road Builders' Association, Concord Hotel, Lake Kinneshaw, N. Y. H. R. Mason, secretary, NYSCHSA, Fonda, N. Y.

### September 30-October 2 Southeastern Association of State Highway Officials

Meeting, Tutwiler Hotel, Birmingham, Ala. A. Reese Harvey, secretary, SASHO, Alabama State Highway Department, Montgomery, Ala.

### October 5-8 National Association of Corrosion Engineers

Symposium, Boston, Mass. M. M. Jacobson, NACE, Watertown Arsenal Laboratories, Watertown 72, Mass.

### October 7-10 Short Course on Roadside Development

Seventeenth Annual Short Course, Columbus, Ohio. Wilbur J. Gramhausen, chief landscape architect, SCRDO, Ohio Department of Highways, Columbus 15, Ohio.

### October 13-18 American Society of Civil Engineers

Annual Convention, Statler-Hilton Hotel, New York City. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York, N. Y.

### October 15-18 American Bridge, Tunnel and Turnpike Association

Annual Meeting, Hotel John Marshall, Richmond, Va. J. Allyn Stearns, executive secretary, ABTTA, P. O. Box 148, White Plains, N. Y.

### October 20-21 National Association of Corrosion Engineers

Annual Conference and Exhibition of South Central Region, Roosevelt Hotel, New Orleans, La. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

SEPTEMBER, 1958

### October 20-24 Natl. Safety Council

Forty-sixth Safety Congress and Exposition, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

### October 21-22 Natl. Slag Association

Forty-first Annual Meeting, Mayflower Hotel, Washington, D. C. NSA, 613 Perpetual Bldg., Washington 4, D. C.

### October 23-24 Virginia Highway Conference

Conference, Virginia Military Institute, Jackson Hall, Lexington, Va. R. P. Ellison, executive assistant, VHC, 1221 E. Broad St., Richmond 19, Va.

### October 23-25 National Society of Professional Engineers

Fall Meeting, St. Francis Hotel, San Francisco, Calif. J. A. Sontheimer, secretary, California Society of Professional Engineers, c/o St. Francis Hotel, San Francisco, Calif.

### October 26-30 American Institute of Steel Construction

Annual Convention, Greenbrier Hotel,

White Sulphur Springs, W. Va. L. Abbett Post, executive vice president, AISC, 101 Park Ave., New York, N. Y.

### October 26-31 International Road Federation

Third World Meeting, Seop Bldg., Mexico City, Mexico. Robert O. Swain, executive director, IRF, 1023 Washington Bldg., Washington 5, D. C.

### October 27-29 National Lubricating Grease Institute

Annual Meeting, Edgewater Beach Hotel, Chicago, Ill. T. W. H. Miller, executive secretary, NLGI, 4638 Nichols Parkway, Kansas City, Mo.

### November 20-21 Electronic Computation Conference

Conference, sponsored by Kansas City Section of the American Society of Civil Engineers and the Structural Division of ASCE, Continental Hotel, Kansas City, Mo. Steven J. Fennes, secretary, ECC, Civil Engineering Hall, University of Illinois, Urbana, Ill.

## Air photos, soil mapping appraised in HRB bulletin

Two papers on "Air Photo and Soil Mapping Methods: Appraisal and Application" are developed in the Highway Research Board's Bulletin 180. Also included is a listing of the current activities of the U. S. Geologic Survey in mapping, throughout the United States and its territories.

The first paper summarizes data covering 10 years of mapping granular construction materials from aerial photographs. The use of soils maps in the operation and planning of the highway facilities of Ingham County, Michigan, are described in the second.

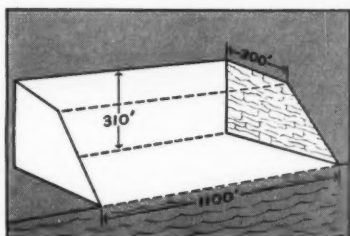
Priced at 80 cents, the bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.



## Joy Challenger Drills Start Powerhouse Rock Job

Joy Challengers started drilling blastholes within 60 days after Merritt-Chapman & Scott was awarded the \$99 million contract last February for construction of the main powerhouse of the Niagara Generating Plant at Lewistown, N. Y. The entire Niagara Power Project will cost \$625,000,000.

### Here's the rock that must be moved



With 9,000,000 cubic yards of plant site rock to drill, M-C&S relies on Joy Challengers to get on with the CONSTRUCTION AHEAD. These Joy

drifters drill 4" or 4 1/2" diameter holes 30' deep without a steel change. Drill cycle speed and smooth operation proved Joy the best for the job.

### Joy TM-500 Drills go deep

The guts of the Joy Challenger is the rugged 630 lb. TM-500, a 5 1/4" bore drill that combines power-packed punch and rotation with outstanding hole cleaning ability to bottom deep blastholes with ease. Features of the TM-500 include:

Force Feed Lubrication of all rotating parts.

Exclusive Joy Dual Valve for positive air control on up and down stroke of the piston.

Replaceable Bushings at all wearing surfaces including the chuck.



### Joy WN-224's Supply the Air

Since M-C&S is using 5 Joy Challengers on the rock, three Joy semi-radial, four-cylinder WN-224 water cooled, two stage compressors are used for air requirements. The WN-224 is the largest package-type compressor available.

Your projects may not be Niagara size but if you're drilling rock, ask a Joy Engineer about equipment that profits you!

Write Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

Write for FREE Bulletin 252-21.  
WSW C7280-252



# JOY

Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.  
**EQUIPMENT FOR CONSTRUCTION**

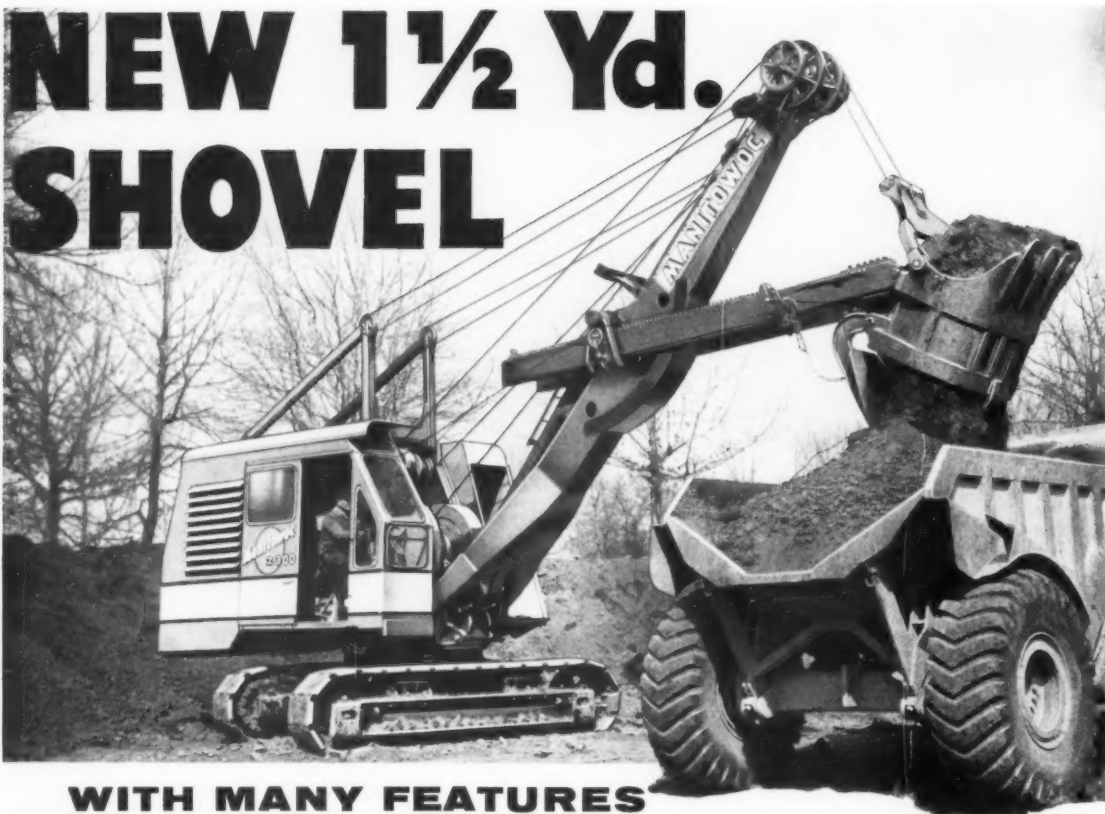
PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • TRAC-DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS  
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

For more facts, use Request Card at page 18 and circle No. 270



Handy for stacking concrete blocks is the fork-lift attachment now available for all Michigan tractor shovels. Designed for rapid installation on the job, the attachment requires no altering of hydraulic connections. Capacities vary from 4,000 pounds at 24 inches from the heel of the fork on the Model 75A 1¼-yard tractor shovel, to 15,000 pounds on the 6-yard Model 375A. For further information write to the Construction Machinery Division, Clark Equipment Co., Dept. C&E, Pipestone Road, Eenton Harbor, Mich., or use the Request Card at page 18. Circle No. 71.

## NEW 1½ Yd. SHOVEL



**WITH MANY FEATURES  
FOUND ONLY ON THE LARGEST MACHINES!**

- ★ Simple, "Power-flo" Slide Pinion Drive . . . Only 11 Gears in Entire Upper Works
- ★ Faster Cycle Speeds
- ★ Air Cooled, Disc-Type Swing Clutch
- ★ Modern, Centralized Lubrication
- ★ Huge, 62" Ring Gear . . . Big 7½" King Pin — Largest in Its Class
- ★ Simplified Air Controls . . . Smooth Torque Converter
- ★ New, Easy Hydraulic Jack Adjustment for Proper Crawler Tensions

### Move up to the Manitowoc 2300

The new, heavy, rugged Model 2300 delivers a true 1½-yd. capacity on any job you can name. You get smooth, powerful, steady performance in dirt or rock . . . as a big capacity shovel, a fast swinging dragline, or heavy-lifting crane.

For economical operation with less downtime; long machine life with high trade-in value; and complete versatility, the new 2300 is the ideal "key" machine for your equipment fleet.

You can make more money on today's jobs only if you have "today's" equipment . . . and the Manitowoc 2300 is as modern as tomorrow. Ask your distributor for literature and full specifications!

**35 TON CRANE** has a low center of gravity and solid stability. Precise, positive control . . . booms to 130'.

**1½-YD TRENCH HOE** cuts an 11' level bottom as deep as 32' without machine travel. Air controls and power brakes.

**BIG CAPACITY DRAGLINE AND CLAM.** Long reach dragline has 1½ - 2½ yd. capacity. Big output clam features fastest closing-hoisting speed.

# Manitowoc

## MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)  
MANITOWOC, WISCONSIN

<b>CRANES</b>	<b>SHOVELS</b>	<b>DRAGLINES</b>	<b>TRENCH HOES</b>
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

For more facts, use Request Card at page 18 and circle No. 271

### Ohio issues 1958-1959 official highway map

The Ohio Department of Highways has issued its 1958-1959 official highway map showing all significant changes made to existing highways since the 1957 map was produced, as well as the major new highways which are now under, or scheduled to be placed under, construction this year.

All incorporated municipalities are shaded in yellow, and there are larger and more detailed insets of Ohio's three largest cities—Columbus, Cincinnati, and Cleveland. Other features include an explanation of new "Yield Right of Way" signs, a map of the eastern half of the United States (with all major routes indicated), illustrations of edge-lined highways, an index to points of interest, and a diagram of the Interstate Freeway network in Ohio.

Copies of the map may be obtained from the Ohio Department of Highways, Room 1010, Ohio Department Bldg., Columbus, Ohio.

### Research and patent consulting service opens

Dr. George E. Ziegler, a research consultant for Zonolite Co., Chicago, Ill., has opened a physics, patent, and research consulting service at 3020 Grant St., Evanston, Ill. Consultation in the fields of general and advanced physics, electro-mechanics, optics, electronics, and the construction industries will be provided.

Consulting services will include court service as a patent expert witness, preparation of advanced physics patent applications, and application of physics technology in sales presentations. Other services include evaluation of company patent and research positions as an investment analysis tool, and consultation on research management.

### Pennsylvania pike news

The Pennsylvania Turnpike Commission has approved the appointment of its safety director, Harold S. Roberts, to the Safety Committee of the American Bridge, Tunnel and Turnpike Association. Roberts will serve on the committee, which will coordinate the safety activities of its members.

CONTRACTORS AND ENGINEERS

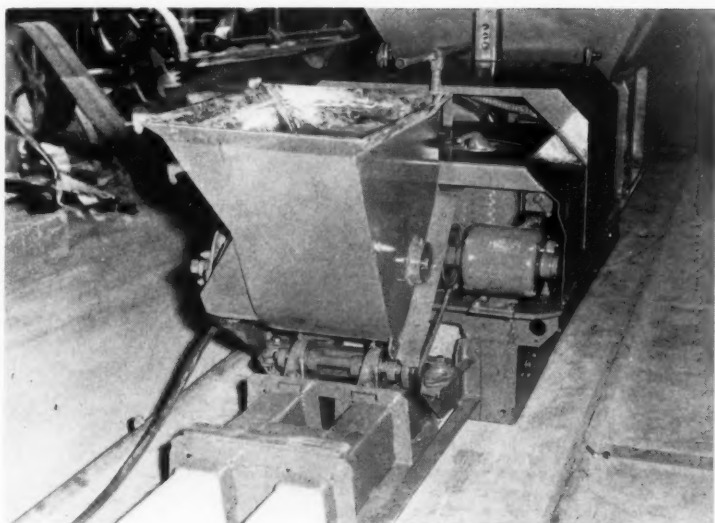


# PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.



## Concrete extrusion machine runs on prestressing bed



The Prestressed Equipment Co. announces an extrusion, slip-forming machine for the production of prestressed concrete. Available in two models, the unit produces a variety of shapes including keystone joists, tee joists, I-joists, double tees, channels, and flat slabs.

The unit reportedly will produce two rows of 8-inch keystone joist continuously at the rate of 3 fpm. It runs on a flat conventional-type prestressing bed 15 to 20 feet wide and 400 to 600 feet long. The machine is electrically operated, and obtains all its traction from the flat bed without the need of any lugs or special grippers cast into the bed.

For further information write to the Prestressed Equipment Co., Dept. C&E, P. O. Box 1264, Lakeland, Fla., or use the Request Card at page 18. Circle No. 84.



## Mobile hydraulic lift is boon to prestressing plants

A new mobile hydraulic lifting unit, said to be particularly useful in the handling of prestressed girders and other prestressed-concrete members, is announced by Travelift & Engineering, Inc.

On this Travelift, lifting, propulsion, and steering are accomplished hydraulically, and all movements are controlled from the operator's platform by one man.

According to the manufacturer, the machine finds valuable application in clearing the beds, transporting the girders to the storage area, and in the subsequent loading of the girders on trucks. In the girder-handling operation, two units are used in tandem, and the hydraulic drive system so cushions the movement as to eliminate any sway of the girders during the transporting. Hydraulically oper-

ated trolleys provide for lateral movement of the load.

The unit can also be used to pull strand, set caging, handle and set forms, pour forms, and to do many other jobs where heavy lifting and moving problems are involved. It can be employed to strip forms in lengths to 60 feet, from both sides of the bed, and reset them on other beds in a single operation.

Offered in standard capacities of 7, 12, and 25 tons, this Travelift can also be modified to provide for increased length, width, and height where such changes are required to handle larger components.

For further information write to Travelift & Engineering, Inc., Dept. C&E, Sturgeon Bay, Wis., or use the Request Card at page 18. Circle No. 132.





The necessity of measuring and marking each piece of steel to be bent is eliminated by a measuring scale attached to the bending arm.

### New, unique tool shapes reinforcing steel on job

A manually operated tool for on-the-job bending of reinforcing steel is available from the Clyde Mfg. Co., Inc.

According to the manufacturer, the tool will bend  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ , and  $\frac{3}{4}$ -inch steel to practically any shape. The 12-pound unit can be set up for operation in a matter of minutes, and is easily carried in the back of a pickup truck.

The company claims that a single unskilled workman can produce complex shapes as fast as two or three men can tie them in place.

For further information write to the Clyde Mfg. Co., Dept. C&E, Bridgeway and Turney, Sausalito, Calif., or use the Request Card at page 18. Circle No. 12.

### New rock drill bit reduces drag, binding

For rock formations where better clearance is needed and extraction of the bit is difficult, Brunner & Lay offers its cutaway-type carbide Rok-Bit.

The bit has self-clearing chip channels and fast cutaway wings, designed



to minimize drag and binding. It is available in gage sizes from  $1\frac{1}{2}$  through 4 inches.

For further information write to Brunner & Lay, Inc., Dept. C&E, 9300 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 52.

### Improved sample splitter handles all aggregates

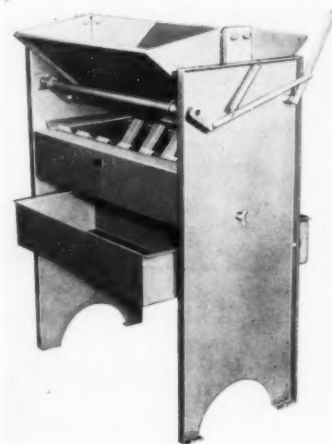
An improved sample splitter for the reduction of aggregate samples, from sand through coarse sizes, is announced by the Gilson Screen Co.

In using the new unit, the sample to be reduced is placed in a lever-actuated clamshell hopper where it may be leveled or evenly distributed by hand. The lever opening of the hopper releases the sample precisely on the center line of the splitter chutes be-

low. Each half of the resulting split retains the character and gradation of the original total sample.

The unit measures 39 inches high to the top of the hopper, is 29 inches long over all, and 19 inches wide.

For further information write to the Gilson Screen Co., Dept. C&E, 110 Center St., Malinta, Ohio, or use the Request Card that is bound in at page 18. Circle No. 70.



## This extra-portable new Heltzel Unitized Batching Plant sets up faster...combines dry batch and truck mix



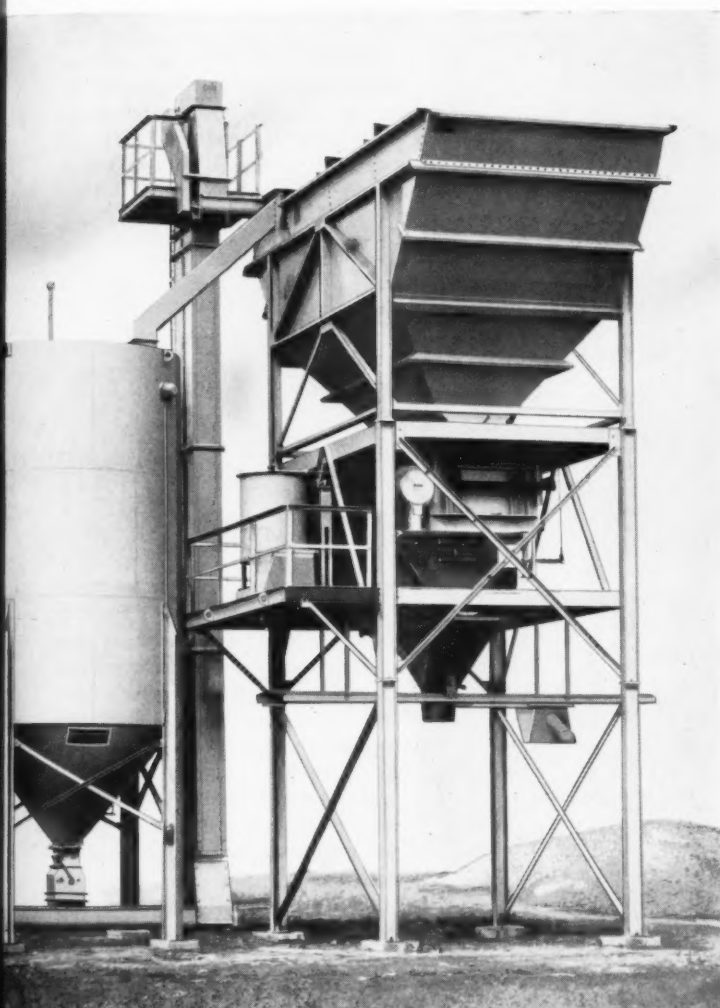
The eight photos in this strip give you the reason so many highway contractors are specifying Heltzel Unitized Batching Plants... speed and simplicity of set-up and dismantling.







This trap loader is loading vehicles at the rate of 3,600 yards per hour for contractor S. W. Groesbeck of Eugene, Ore., on the Columbia River Highway project near Corbett, Ore. An Albina-built unit, the 14'x 14-foot steel hopper is fed by bulldozers, and the material is transferred into the trucks by a 60-inch inclined belt. Power is supplied by a Cummins Model HR-6-1P 150-hp diesel engine. For further information write to the Albina Engine & Machine Works, Inc., Dept. C&E, 2100 N. Albina Ave., Portland, Ore., or use the Request Card at page 18. Circle No. 90.



**H**eltzel's new Unitized Plant goes together while you watch. It's the ultimate in portable batching equipment! The batching plant is factory assembled in three easy-to-handle sections that require only a minimum crew and standard crane equipment to set up. The factory assembled elevator comes as one complete unit that is easily set in place. The one-piece cement bin completes the basic assembly. For the first time an entire plant—batching section, storage and elevator sections—has been designed to give highway contractors a completely unitized, one-stop, truck mixer charging plant that is also well suited as a dry batch paving unit.

What's more, this is a Heltzel plant in every way. At no point in its design or construction did the engineers sacrifice Heltzel quality. In fact, because scales, batchers, etc., are factory assembled, it's exactly accurate and extremely fast—the finest engineered portable batching equipment developed to date. Make sure you have all the information on this time-saving packaged plant before you buy your next unit.



Heltzel's Traveling Batch Chute converts the plant from a ready-mix batch plant to a dry batch plant, or vice versa, in seconds... another Heltzel innovation to further reduce construction costs.



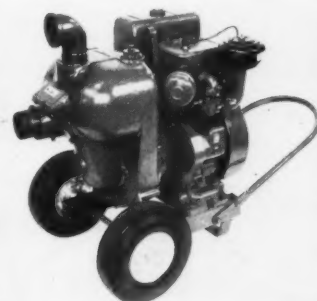
THE HELTZEL STEEL FORM AND IRON CO. WARREN, OHIO

For more facts, use Request Card at page 18 and circle No. 272

## Two new pumps rated at 266 and 333 gpm

The Worthington Corp. announces the addition of two new models of contractors' pumps to its 1958 line.

The Models 15M and 20M are rated at 266 and 333 gpm maximum capacity, respectively. Both incorporate a replaceable cast-iron recirculation



port that eliminates valves and permits renewal of internal clearance. These self-priming centrifugal pumps are engine-driven, but are also available as motor-driven units.

Other features of the new models include a constant-pressure automatic grease lubricator; hydraulically balanced open impeller; and replaceable cast-iron wear plate.

For further information write to the Worthington Corp., Dept. C&E, Worthington and Harrison Aves., Harrison, N. J., or use the Request Card that is bound in at page 18. Circle No. 65.

## Tractor-mounted digger is easily detachable

A fast-digging, easily detachable tractor-mounted power digger called the Panther is announced by Sherman Products, Inc.

The machine is powered by a compact 25-hp hydraulic system that operates at 2,000 psi. It has an available digging force of 19,250 pounds.

A special transmission to step up power-takeoff shaft speed is a feature.

For further information write to Sherman Products, Inc., Dept. C&E, 3200 W. 14 Mile Road, Royal Oak, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 24.



The new pulverizer attachment for Barber-Greene's Model 82-A (crawler-mounted, long-boom) or Model 582 (crawler-mounted, short-boom) bucket loaders permits topsoil stripping, loading, and pulverizing in a single, one-machine operation. Recommended for road contractors doing clay stabilization base work, the pulverizer is driven by a separate, small gasoline engine, and employs a heavy shaft on which a series of free-swinging short chains is mounted. The topsoil is excavated by the loader's spirals, and elevated by a continuous chain of buckets. Discharged from the buckets, the material falls through this rapidly rotating flail arrangement, and is thoroughly pulverized and aerated before finally being discharged into trucks. For further information about this pulverizer attachment, write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 6.

## GREATER VIBRATION LESS MAINTENANCE



with **VIBRO-PLUS**  
**'ROLLGEAR'**  
**VIBRATORS**

### Corbetta Construction Co. Selects Vibro-Plus to Consolidate Mix on New Maintenance Base at N. Y. International Airport

Concrete for this 11 million dollar job was consolidated by Vibro-Plus Rollgear vibrators. Our patented Rollgear principle permits us to produce 12,000 v.p.m. at a shaft speed of only 3600 r.p.m. . . . Competitive equipment must run at shaft speeds up to 12,000 r.p.m.

As an equipment man you well know that the higher the speed, the more frequent the breakdowns. . . . What does this mean to you? . . . It means our core and cable breakage is reduced by as much as 90% — reducing downtime on your job and thereby cutting maintenance costs to the bone. . . . You'll be 'way ahead by looking into the Rollgear line first. . . . See your local Vibro-Plus distributor for all the facts and complete literature.

Ad 41-56



**VIBRO-PLUS PRODUCTS, Inc.**

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

For more facts, use Request Card at page 18 and circle No. 273

### New portable generator has 2.5-kw capacity

A direct-coupled beltless portable electric generator with a capacity of 2.5 kw, supplying 115 volts of direct current, is offered by the Construction Equipment Division of the Thor Power Tool Co.

The Model EG-2.5D weighs 165 pounds (dry) and is 31 1/4 inches long,



20 inches wide, and 19 1/2 inches high.

The aluminum control box has two 15-amp 3-prong receptacles of the straight bayonet-grounding type, which also will accept 2-prong plugs. The control box is available with alternate 3-prong, 20-amp, 125-volt grounded Twist-Lok receptacles.

The Model EG-2.5D's gasoline engine is a four-cycle, single-cylinder unit with a nominal engine speed of 3,600 rpm.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 38.

### Seamless cone offered for concrete slump tests

Slump tests on concrete can now be performed more efficiently with a new seamless slump cone, according to the manufacturer, Soiltest, Inc.

The cone is made of heavy-gage cadmium-plated sheet steel, and is of one-piece construction. The handles and foot clamps are welded in position and are also cadmium-plated to resist rust.

The unit is made in the form of a portion of a cone with an 8-inch-diameter open base and a 4-inch-diameter open top. Height is 12 feet.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 129.

CONTRACTORS AND ENGINEERS



Featuring a digging speed of up to 800 feet per hour, this Auburn Gear-Draulic trencher is designed for use with the Massey-Ferguson Model 202 Work Bull tractor. The rig compensates automatically for varying ground conditions, and handles trenches up to 6 feet deep in 6, 8, 10, 12, and 14-inch widths. The digging boom is operated hydraulically and has a vertical operating arc in excess of 190 degrees. For further information write to the Massey-Ferguson Industrial Division, Dept. C&E, 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 48.



### Single-unit pipe coupler for pressure-joint pipe

The E. H. Wachs Co. offers a new single-unit pipe-coupling machine for cement-asbestos, concrete, clay,



The Wachs pipe coupler sits on top of the pipe, and is clamped in position with a single-action lever.

or cast-iron pressure-joint pipe.

According to the company, this compound leverage coupler pulls the pipe all the way home for a tight, positive seal. The unit sits on top of the pipe, and is clamped in position with a single-action lever. No chains, cables, or pulleys are required.

The units are furnished in six sizes, from 6 to 16 inches.

For further information write E. H. Wachs Co., Dept. C&E, Chicago 22, Ill., or use the Request Card at page 18. Circle No. 11.

### Quick erection a feature of automatic batch plant

The Automaster-A, an automatic aggregate batch plant with a capacity of up to 229 batches per hour, is offered by the C. S. Johnson Co.

According to the manufacturer, though the number of sections is kept to a minimum to permit quick erection and disassembly, the maximum erection lift is only 9 tons. Batching and recording equipment remain intact during moves.

Bins are available in 3 and 4-compartment styles, both with 120-cubic-yard heaped capacity.

For further information write to the C. S. Johnson Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 17.



equipped for **heavy** fabrication

- Over 1½ million square feet of plant space
- 26 overhead cranes
- 23 punches and shears

For a reliable source of structural steel for bridges, power houses, commercial and industrial buildings, coke ovens, material handling systems and industrial furnaces, have Levinson bid your next job.

over fifty years experience

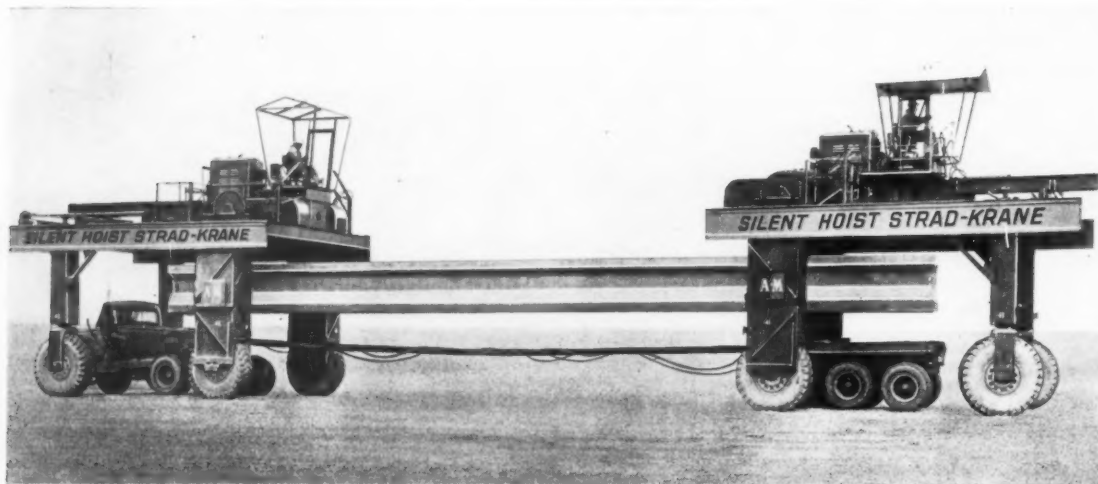
the **LEVINSON STEEL** COMPANY

Fabricators, Designers, Erectors of Steel

Pittsburgh 3, Pa.  
Phone: HUbbard 1-3200



For more facts, use Request Card at page 18 and circle No. 274



On the Strad-Krane, the center of the load is always inside the wheel supports. This eliminates counterweights, stabilizers or jacks, thus increasing the rig's mobility.



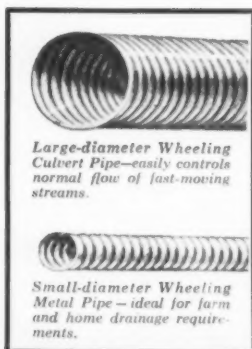
**Problem:** How to channel the flow of this shallow, meandering creek? Standard round pipe would take too much headroom.



**Solution:** Wheeling Pipe Arch, a wider type of metal pipe. It does not require additional grading to provide sufficient covering for the pipe.

*Headroom limited?*

**Use Wheeling Pipe Arch for fast drainage!**



Large-diameter Wheeling Culvert Pipe—easily controls normal flow of fast-moving streams.

Small-diameter Wheeling Metal Pipe—ideal for farm and home drainage requirements.

Particularly effective for shallow streams, Wheeling Pipe Arch assures fast, efficient water flow. That's because it has a wide, comparatively flat base that permits more rapid drainage than round pipe of equal area. And it has the same toughness and durability that made other types of Wheeling Culverts famous.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or

copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters to solve any drainage problem.

Contact your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.



**WHEELING CORRUGATING COMPANY—IT'S WHEELING STEEL**

WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: Atlanta Boston Buffalo Chicago Columbus Des Moines Detroit Houston Kansas City Louisville Madison Martins Ferry Minneapolis New Orleans New York Peoria Philadelphia Richmond St. Louis. For more facts, use Request Card at page 18 and circle No. 275

### Crane proves handy in prestress work

A material-handling crane designed as a traveling bridge and mobile crane in one unit is available from the Silent Hoist & Crane Co.

Designated Strad-Krane, the unit is self-propelled on pneumatic tires, and is said to be of especial value in handling large and weighty prestressed-concrete members.

According to the manufacturer, its prime feature is that the center of the load is always inside the wheel supports. This eliminates the need for counterweights, stabilizers, or jacks, thereby increasing the machine's mobility and function.

The load to be carried is suspended from a hook under the frame of the unit. This hook can be spotted directly over the load, and is controlled by a trolley bridge hoist located on the top structure. The hook can travel transversely from one end of the machine to the other and also up and down.

The machine shown in the photo

## CONCRETE TESTERS

*The World's Finest  
Low-Cost  
Precision Testers*

**For  
CYLINDERS  
CUBES  
BLOCKS  
BEAMS  
PIPE**

IF IT'S A CONCRETE TESTER  
YOU NEED-GET IN TOUCH WITH

**FORNEY'S, Inc.**  
TESTER DIVISION  
P. O. BOX 310 • NEW CASTLE, PA.

For more facts, circle No. 276

CONTRACTORS AND ENGINEERS



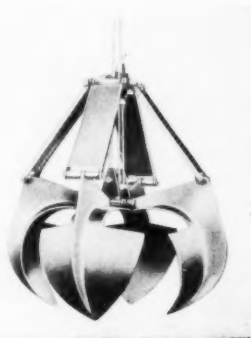
handles many jobs for the American-Marietta Co. It lifts the 100-foot 50-ton prestressed-concrete beams out of the forms and transports them to the yard area for curing. After curing, it lifts and loads the beams onto special over-the-road trailers.

In addition, the company reports, the Strad-Krane lifts and transports loaded concrete hoppers, delivers them over the forms, pours concrete into the forms, fills over 600 feet of I-beam forms every working day, and even strips the forms from the concrete. It also does all the chores of a fork-lift truck and a mobile crane in unloading steel, cable, and other material from motor trucks, and loading and unloading railroad freight cars.

For further information write to the Silent Hoist & Crane Co., Dept. 159, Dept. C&E, 841 63rd St., Brooklyn 20, N. Y., or use the Request Card at page 18. Circle No. 131.

### Announce new series of heavy-duty buckets

The Erie Strayer Co. announces a new series of grab, grapple, and orange peel buckets for handling rock,



riprap, boulders, and other hard-to-handle materials.

According to the company, features of the grapple include heavy welded construction; oversize pins and bushings; recessed Alemite grease fittings; up to four parts of line reeving; large cast-steel sheaves; and positive socket-and-wedge cable attachment.

For further information write to the Erie Strayer Co., Dept. NR-68, Dept. C&E, Rudolph Ave. and NKP RR, Erie, Pa., or use the Request Card that is bound in at page 18. Circle No. 25.

### Hydraulic form pin puller prevents damage to forms

A new hydraulic form pin puller is announced by the Nelson Dowel Holder Co.

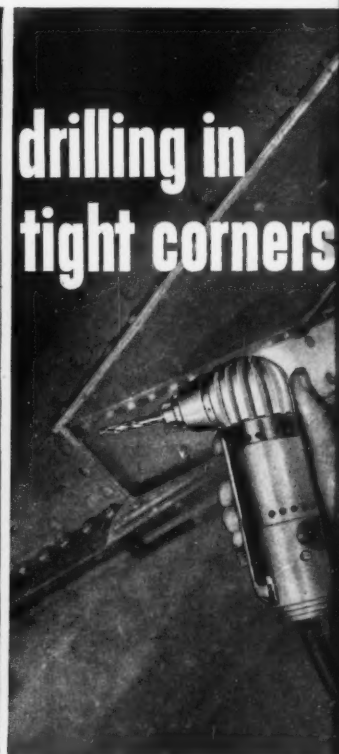
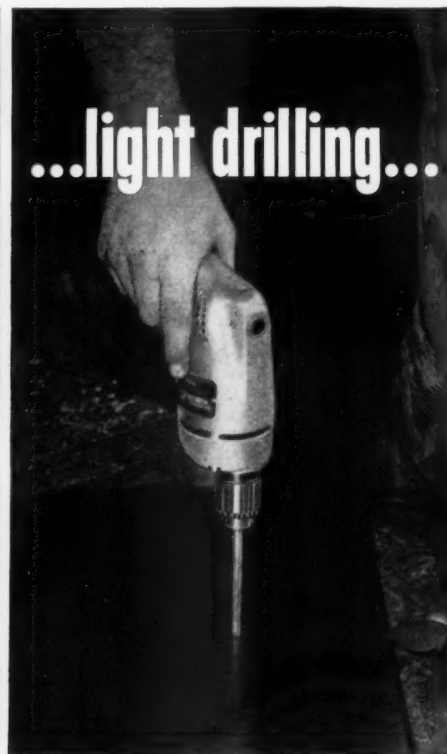
The rig is manually cranked along the edge of a paving slab. Besides pulling the form stakes with ease, the machine prevents the bending of pins and damage to the forms or the slab, according to the manufacturer.

Power for the unit is delivered by a Kohler Model K161 engine.

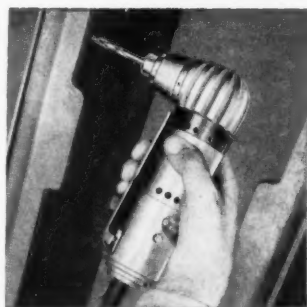
For further information write to the Nelson Dowel Holder Co., Dept. C&E, Lebanon, Tenn., or use the Request Card that is bound in at page 18. Circle No. 69.

For more facts, use coupon or circle No. 277

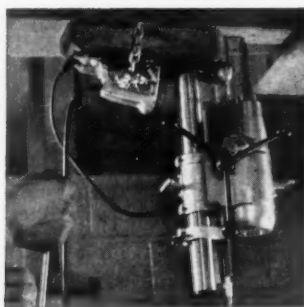
Spanning excavation and form bracing to move concrete from the transit-mix truck into the forms is a typical use for the Faircrete conveyor. The unit pictured employed by the Mal-Bros. Co. of Newark, N. J., is pouring footings for the new freight hangars located at the Port of Newark. According to the company, the conveyor spanned the excavation easily, and provided up to 40 yards of concrete per hour. For further information about the Faircrete conveyor write to The Fairfield Engineering Co., Dept. C&E, 324 Barnhart St., Marion, Ohio, or use the Request Card at page 18. Circle No. 29.



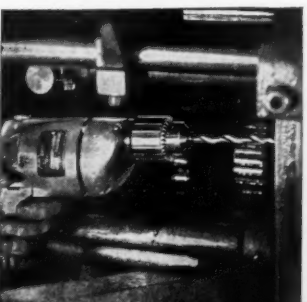
## There's a Black & Decker Drill powered for every job!



**LITTLE SHORTY's** the drill you want for those hard-to-get-to, around-corner jobs. Gets in tight spots! Excellent for small unit assembly.



**DRILLS UPSIDE DOWN!** B&D Magnetic Drill Press sticks to the wall like a fly; operates manually or with exclusive remote control.



**TREMENDOUS TORQUE** for the tough jobs.  $\frac{3}{4}$ " H.D. Hogun® is geared and powered to take on the hard ones. Compact to work in close quarters.



**MOST POWERFUL** drill of its size available, the  $\frac{3}{4}$ " Standard! A rugged tool with plenty of zip in reserve. Fully reversible; positive drive chuck.

71% of purchasing agents say make mine Black & Decker

A recent industrial publishing company survey reveals that when purchasing agents need electric tools most think first of Black & Decker! One reason why: 33 different drills each designed to give you the power you need *plus* easy handling and long, troublefree life!

If you have a drill problem—a small hole in trir to a large hole up among the structural steel—be sure to see Black & Decker. Better still, mail the coupon for a free demonstration of our drill line. **THE BLACK & DECKER MFG. CO., Dept. 1309, Towson 4, Maryland.** (In Canada: Brockville, Ontario).

Leading Distributors Everywhere Sell



**Black & Decker®**  
Quality Electric Tools . . . Power-built for top performance

MAIL COUPON FOR FREE DEMONSTRATION

THE BLACK & DECKER MFG. CO., Dept. 1309, Towson 4, Md.

☐ Please arrange for a demonstration of the following drill(s) .....

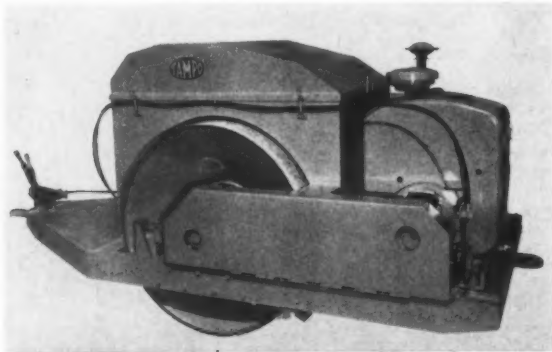
☐ Please send me additional information.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....



With a gross weight of only 7 tons, Tampo's Model C-40 tow-type vibratory roller features compacting power ranging up to 40 tons.

#### Vibratory roller offers 30 to 40-ton compaction

A tow-type vibratory roller offering 30 to 40-ton compaction, with a gross weight of 7 tons, is announced by the Tampo Mfg. Co.

Designated Model C-40, the unit has a roll width of 51 inches, and is 11 feet 3 inches long, 60 inches high, and 61 inches wide. Power is supplied by a Hercules Model C2-90 air-cooled 30-hp valve-in-head engine.

On the C-40, a combination of

pneumatic and rubber shock mounting reportedly isolates the roller from vibratory shock. Vibration frequency is variable by throttle setting, and is remotely controlled from the operator's seat.

For further information write to the Tampo Mfg. Co., Dept. C&E, P. O. Box 2340, San Antonio 6, Texas, or use the Request Card at page 18. Circle No. 4.

#### Announce new form tie with break-back design

Gates & Sons, Inc., announces a new break-back form tie. Called PlastiCone, the tie is designed to produce a positive break-off 1 inch or 1½ inches back from the surface of the finished concrete.

According to the manufacturer, the device incorporates a molded poly-



ethylene cone which is inserted in each end of the form tie. It envelopes the tie from the point of breakoff, out to the surface of the wall, thus preventing excess bleed at the tie slot. The company points out that PlastiCone ties can be removed, with practically no spalling, immediately after forms are stripped.

Another advantage of the cones is that they require no oiling or special treatment, since concrete cannot adhere to the glass-smooth surface.

For further information write to Gates & Sons, Inc., Dept. C&E, 80 S. Galapago, Denver 23, Colo., or use the Request Card at page 18. Circle No. 55.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

#### New 115-volt generator mounts on vehicle engines

A 115-volt ac generator, designed for users of portable lighting and electric power tools, is available from Electric Controls, Inc. The 1,000-watt unit, designated Model DSD, is a small and compact unit, easily mounted to vehicle engines.

The dash-mounted controls include throttle control, control meter, dc field excitation fuse, toggle on-off switch, indicator pilot light, and ac load fuse.

For further information write to Electric Controls, Inc., Dept. C&E, Wales, Wis., or use the Request Card at page 18. Circle No. 116.

## SPEEDS CAST-IRON PIPE INSTALLATION



### Marcelletti & Son doubles daily production with fast-digging Cleveland

A fast-digging Cleveland 110 trencher enabled Emil Marcelletti & Son of Bedford, Ohio to make the most of the speedy pipe-laying made possible by new quick-connecting, bell-and-spigot type cast-iron pipe on this water line installation in North Ridgeville, Ohio.

Marcelletti's daily production, before

putting the Cleveland on the job, had been limited because the backhoe method he was using didn't open trench fast enough to stay ahead of the swift moving pipe-laying operation. The 110 quickly doubled his daily production, on some days turning out nearly 3 times the trench footage he had been getting.

"The 110's high, reliable production and its ability to get by obstructions in narrow quarters really paid off for us on this job," says Jim Marcelletti, secretary-treasurer of the firm. "It's quick-shifting conveyor let it dig right by hundreds of trees, poles and hydrants along the trench line, obstructions that had previously slowed up our trenching operations."

**accurate • fast • dependable • clean**  
—there's nothing like a Cleveland for trenching



**The CLEVELAND TRENCHER Co.**

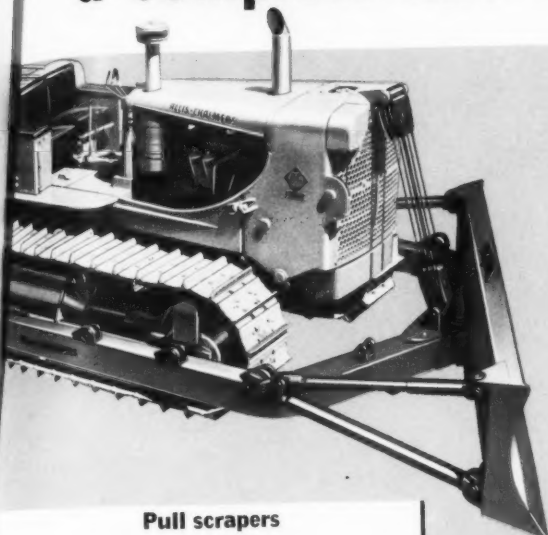
20100 St. Clair Avenue

Cleveland 17, Ohio

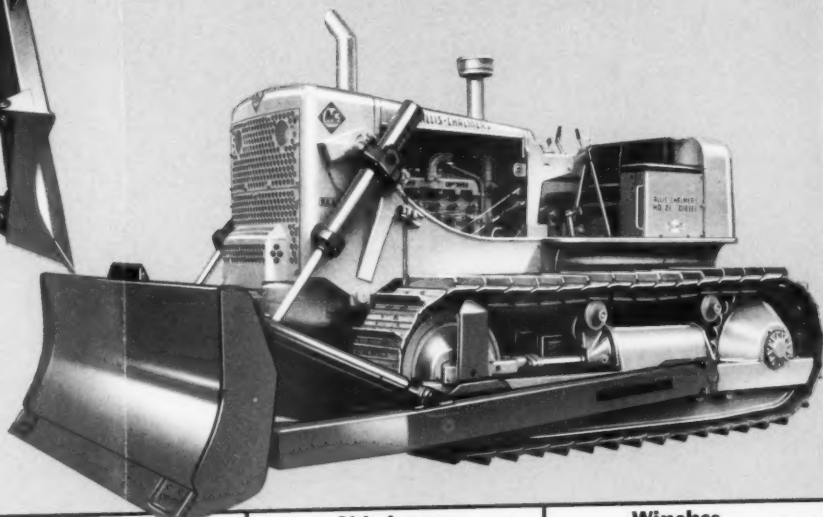
For more facts, use Request Card at page 18 and circle No. 251



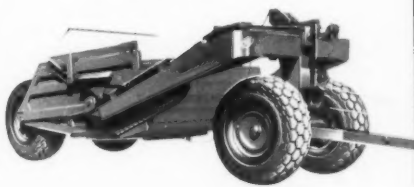
# a complete line of matched attachments



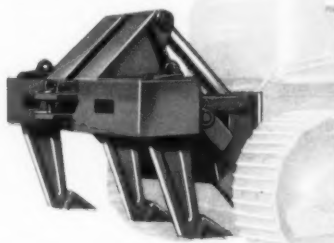
**ALLIS-CHALMERS BULLDOZERS**  
are stronger, last longer, easier to control. Choose from a complete line of heavy-duty dozers to match your needs or preferences—straight or angle blade, hydraulic or cable control.



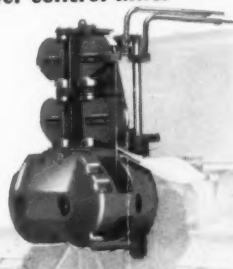
**Pull scrapers**



**Mounted rippers**



**Power control units**



**Side booms**



**Winches**



A demonstration on your job will prove their value . . . call your Allis-Chalmers dealer now.

## Look ahead...*move ahead*...and stay ahead

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

# ALLIS-CHALMERS



FORM M5-1303

LITHO. IN U.S.A.





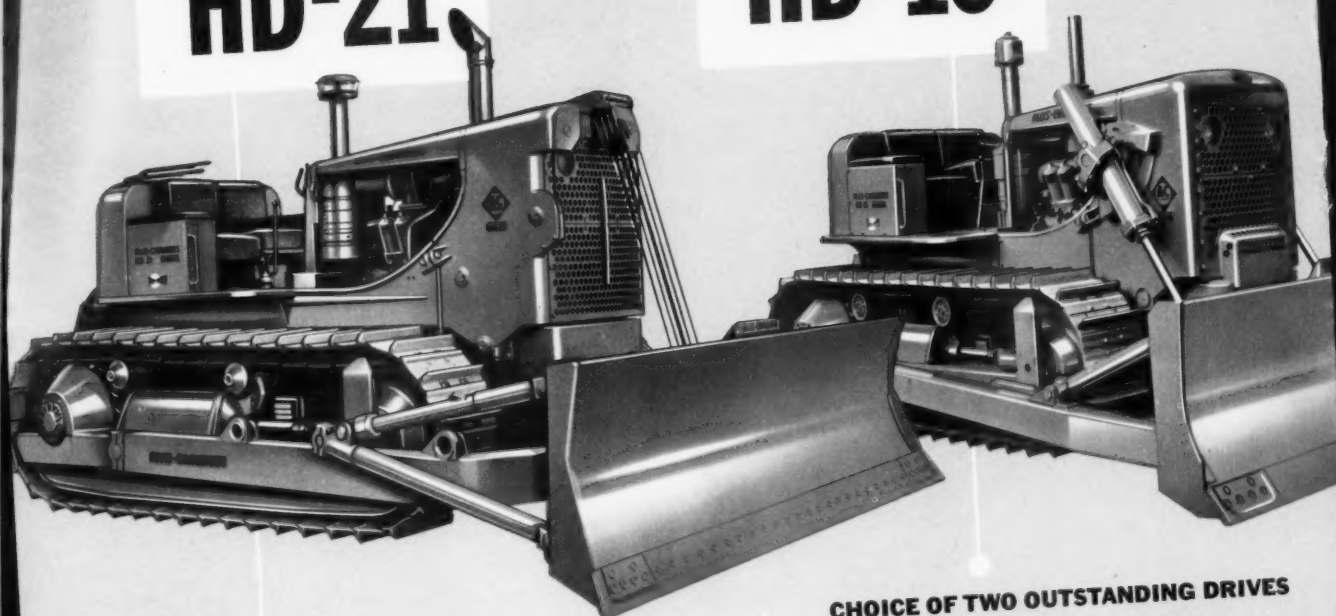
# There's an extra measure of IN EVERY SIZE.

ALLIS-CHALMERS

## HD-21

ALLIS-CHALMERS

## HD-16



225-hp turbocharged engine  
Hydraulic torque converter drive  
56,260 lb (approx. as shown)

The new HD-21 brings you live power for today's big-tractor jobs—and torque converter drive puts it to work automatically. The HD-21 offers more work capacity—dollar for dollar—than any other big crawler tractor you can buy.  
*HD-21A illustrated—Two other models available*

### CHOICE OF TWO OUTSTANDING DRIVES

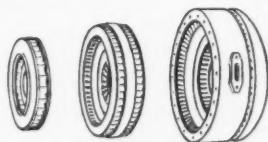
Hydraulic torque converter  
150 net engine hp  
39,090 lb (approx. as shown)

All-gear  
141 belt hp  
125 drawbar hp

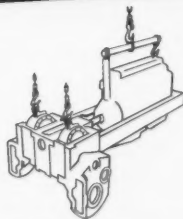
Get up on the HD-16 yourself—and see how it handles jobs ordinarily assigned only to bigger, more expensive crawler tractors. You'll sell yourself—just as more keen-eyed construction men do every day.

*HD-16DC illustrated—Five other models available*

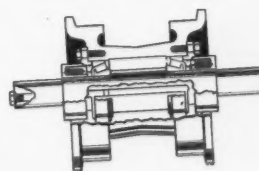
**Pioneered  
and proved by  
Allis-Chalmers  
Engineering  
in Action**



**Torque Converter Drive**  
gets more work done—  
automatically provides the  
right pull or push for every  
load, at maximum speed for  
existing conditions. (Available in HD-21 and HD-16 only.)



**Unit Construction**  
saves valuable time... lets  
you remove any major assembly  
without disturbing adjacent assemblies.



**1,000-Hour Lubrication**  
intervals for truck wheels,  
idlers, support rollers...  
changes daily greasing time  
into production time.

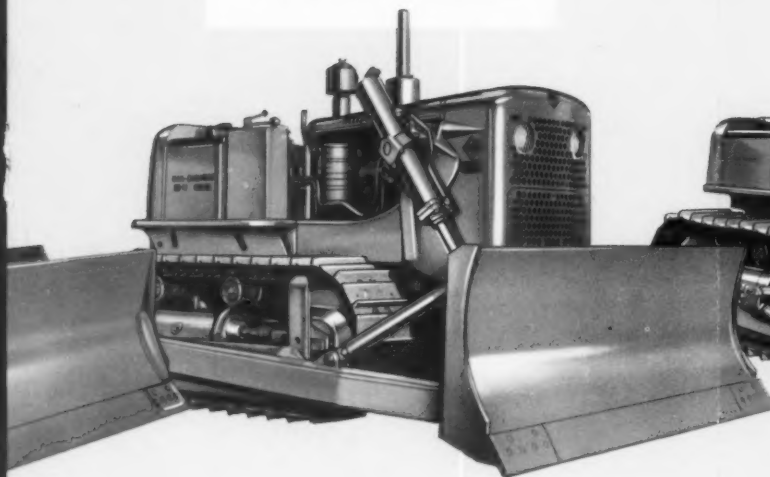
THE ONLY COMPLETE LINE OF CRAWLER TRACTORS THAT

# performance and dependability

.. A SIZE FOR EVERY JOB

ALLIS-CHALMERS

## HD-11



94 belt hp  
25,960 lb (approx. as shown)

The HD-11 is setting new standards in its size range ... offers you dozens of work-boosting advantages, including the industry's easiest shift pattern. A single shift takes it from any forward speed to any reverse—gets short-cycle jobs done faster, easier.

*HD-11B illustrated—Two other models available*

ALLIS-CHALMERS

## HD-6



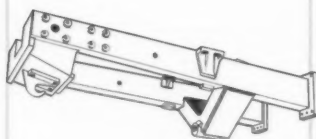
63 belt hp  
16,470 lb (approx. as shown)

Here's up to 15,500 lb drawbar pull. The HD-6 is the only tractor near its size with big-tractor design advantages—for example, All-Steel Box-A main frame and engine-mounted dozer with direct-lift cylinders for improved weight distribution, accurate dozing and long life.

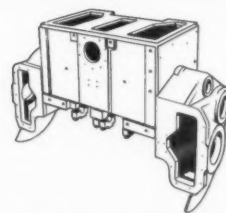
*HD-6E illustrated—Three other models available*



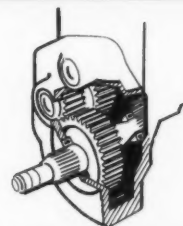
**True-Dimension Track** heat-treated and machined in the industry's most modern facilities, is setting new track-life records on every type of work.



**All-Steel Box-A Main Frame** soaks up shock and strain ... provides improved weight distribution and equipment mounting.



**One-Piece Steering Clutch and Final Drive Housing** with extreme rigidity and strength ... line-bored to provide precise alignment of gears and shafts.

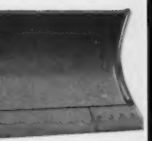


**Straddle Mounting of All Final Drive Gears** with tapered roller bearings on both sides of short, large-diameter shafts ... provides extra gear life.

GIVES YOU ALL THESE ADVANTAGES IN EVERY SIZE..PLUS



the  
van-  
and  
im-  
life.  
e



of All  
bear-  
short,  
...  
fe.  
S

V  
O  
L  
S

S

XU



**Look ahead**  
*...move ahead*  
*...and stay ahead*  
**with**  
**Allis-Chalmers**  
**crawler tractors**

**first choice on  
 more and more tough jobs**



Four big advantages stand out in the coast-to-coast swing to Allis-Chalmers crawler tractors:

- » outstanding work capacity
- » real dependability under severe conditions
- » easy maintenance and lubrication
- » timesaving, cost-cutting service

As a result, Allis-Chalmers users bid closer to the belt, set schedules with more confidence, end up "in the black." So before you buy your next tractor, take a close look at these machines . . .

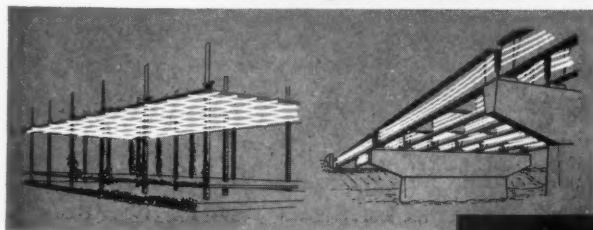




This self-powered concrete bucket utilizes the weight of its load to generate the hydraulic pressure needed to operate the opening and closing mechanism. The Blaw-Knox unit literally hangs on two hydraulic cylinders. The operator merely turns a hydraulic valve to open the bucket, and releases the valve to close it. Every time the bucket is set down the cylinder is, in effect, recharged. An auxiliary radio remote-control system is also available. For further information write to the **Blaw-Knox Co.**, Dept. C&E, P. O. Box 1198, Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 72.

For more facts on insert, circle No. 279

## PATTERNS OF TOMORROW TODAY



Tomorrow's patterns for gracefully functional structures, combining great strength with a minimum of mass, are taking shape today throughout the world.

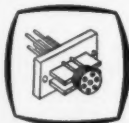
Their design and construction characteristics are made possible, in large part, through widespread developments in concrete prestressing techniques and methods.

The Prescon System of post-tensioning is proving its worth in buildings, bridges, reservoirs and in many other structures employing prestressed concrete.

FOR THE CONTRACTOR it means tendons delivered to the job site, completely assembled, clearly identified and ready for the forms; a Prescon representative to instruct his men in placing and stressing the tendons, using stressing equipment—provided by Prescon.

FOR THE ARCHITECT AND CONSULTING ENGINEER it means assistance with design and engineering when needed; and assurance that Prescon can be specified with confidence.

FOR THE OWNER it means graceful, functional construction with maximum space utilization, and long spans with minimum material usage.



### THE PRESCON CORPORATION

905 NAVIGATION BLVD. • PHONE TU 2-6571 • P.O. BOX 4186  
CORPUS CHRISTI, TEXAS

BRANCH OFFICES: DENVER • LOS ANGELES • ATLANTA  
MEMBER OF THE PRESTRESSED CONCRETE INSTITUTE

For more facts, use Request Card at page 18 and circle No. 280

Write for new folder giving complete, detailed information including examples of structures using The Prescon System.



## Round column forms for single-use jobs

The Deslauriers Column Mould Co., Inc., announces its Econ-O-mold fiber form for round concrete columns.

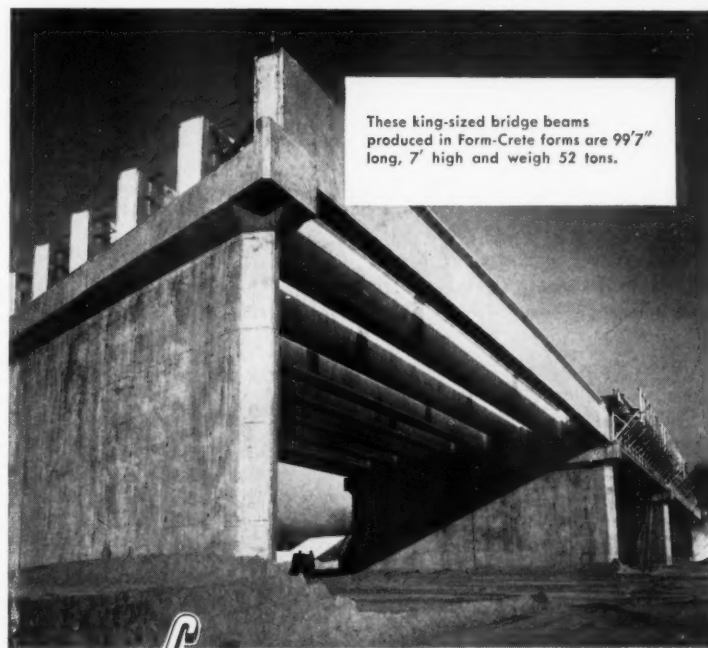
Econ-O-mold is especially designed for jobs requiring single use or a limited number of round concrete columns of any type, including underpinning, stub columns, quarter, half, and obround columns. Lightweight, easy to store on the job, and easy to saw to fit any size column, Econ-O-mold requires fewer men to handle and erect. According to the manufacturer, only minimum bracing is needed for either spiral or straight steel reinforcements.

Standard 18-foot lengths are avail-



able in 3-inch to 48-inch ID.

For further information write to the Deslauriers Column Mould Co., Inc., Dept. C&E, 5036 W. Lake St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 30.

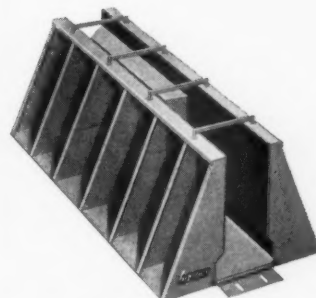


These king-sized bridge beams produced in Form-Crete forms are 99'7" long, 7' high and weigh 52 tons.



## BRIDGE BEAMS

## MEET REQUIREMENTS OF ANY CURRENT PRESTRESSING TECHNIQUE



Form-Crete P.C.I.-A.A.S.H.O. approved bridge beams assure national standardization, permit quick setup and stripping time.



Putting Ideas to Work

### Form-Crete Department

General Sales Offices:  
Lakeland, Florida — Riverside, California

#PF-13

What prestressing techniques do you favor? Pretensioning with straight or deflected strands, post-tensioning, or a combination of pretensioning and post-tensioning?

With Form-Crete Bridge Beam forms you can use any acceptable type of prestressing in current practice. In addition, the heavy plate construction of Form-Crete Bridge Beam forms enables the producer to handle the entire individual beam length at one time when pulling or resetting the forms.

What's more, form lengths are fabricated in 10-foot standard intermediate and end sections and combinations of 20" and 40" sections to provide the exact beam length desired. Don't delay. Write today for detailed information.

FOOD MACHINERY AND CHEMICAL CORPORATION  
FORM-CRETE Department  
LAKELAND, FLA. • RIVERSIDE, CALIF.

Please send me a copy of your latest catalog.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon, or Request Card at page 18 and circle No. 281



Swing-type side extension brackets on this Transport Trailers unit provide the width where needed for big equipment.

### Triple-axle trailer for weighty equipment

The Model GTX heavy-duty triple-axle trailer is offered by Transport Trailers, Inc.

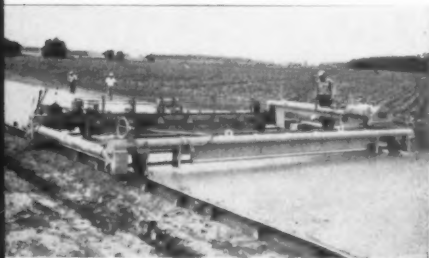
Available in sizes from 30 to 100 tons, the unit has a removable goose-neck, and standard and extended beavertails. The triple-axle assembly is equipped with three full-width cambered tubular axles, allowing both lengthwise and crosswise oscillation. Heavy-duty rubber bushed radius rods prevent axle rotation and maintain positive axle alignment. This over-all design assures equal distribution of weight on each axle, according to the manufacturer of the unit.

For further information write to Transport Trailers, Inc., Dept. C&E, P. O. Box 968, Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 106.

### Road finishing float has several improvements

A new Rex longitudinal float is announced by the Chain Belt Co.

The machine features a carriage which travels transversely between the tubular frames on a set of single



The basic frame members on the machine are of tubular construction for additional strength, with flanged frame corner connections for fast and easy disassembly.

crown rails. Crown adjustment is made through a single point hand-wheel control at the front and rear of the machine for each crown rail. An independent power unit on the floating carriage allows independent control of carriage speed and traction speed. An automatic mechanical trip lever on the unit reverses carriage direction at each end of the cycle.

The machine is supplied in two basic width adjustments, 10 to 15 feet and 20 to 25 feet.

For further information write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 93.

### Announce pre-amplifier for two-way radios

A 450-mc pre-amplifier unit for two-way radios, designed to increase the sensitivity of the receiver at the office location, is announced by General Electric.

The company points out that the new device improves the effective talk-back range of mobiles associated with the system without the necessity of adding equipment to the radio unit in the car itself. However, the pre-amplifier can be used in the car.

The use of the unit at the station receiver provides a range increase equivalent to an increase of four times the power of a mobile transmitter, according to the manufacturer.

For further information write to the General Electric Communication Products Dept., Section P, Dept. C&E, Electronics Park, Syracuse, N. Y., or use the Request Card at page 18. Circle No. 92.

# Western Contracting using 12



## 73 of them are Twin-Powered

Stage IV of Oahe Reservoir Project in South Dakota is a huge earthmoving job that involves 24½ million yards of excavation. Western Contracting Corp. is nearly a year ahead of schedule on their contract with the Corps of Engineers which calls for completion by November, 1959.

The Euclid fleet being used by this leading contractor totals 120 units... and 73 are big capacity, Twin-Powered scrapers, rear-dumps and crawler tractors. Working two 10-hour shifts 6 days a week, the "Eucs" are making the dirt fly... have moved as much as 110,000 yds. a day.

Twenty-five "Twin" Scrapers are pushed in heavy shale by big TC-12 Crawlers... get loads of about 30 yds. The TS-24 "Eucs" averaged 7½ loads per hour on a 2.2

mile cycle with several long grades up to 5½% adverse. Good supervision and excellent haul roads helped in maintaining this high production, but good loading ability and fast travel speed of the "Eucs" were important factors, too. Project Manager "Rip" Collins commented, "... if it weren't for the "Twin", the shale in the spillway section wouldn't be a scraper job".

On big projects like Oahe, and on small yardage work, too, "Twins" are moving the cheapest dirt. Your Euclid dealer can arrange a demonstration on your job and show you why "Twins" give you a greater return on investment... get in touch with him before you bid that next job!

**EUCLID** Division of General Motors, Cleveland 17, Ohio



# EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



Flotation tire and wheel or tire and rim assemblies, especially designed for use with graders, loaders, and other heavy off-the-road equipment, are available from the Harma Tire & Rubber Corp. WB-22 flotation tires will fit Caterpillar, Austin-Western, Adams, and other motor graders, and Hough, Case, Michigan, Trojan, Koehring, and other power loaders. These tires are claimed to give twice the ground contact area of conventional tires, and enable heavy equipment to operate without stalling on slopes as steep as 40 per cent, or in loose sand, heavy muck, or other adverse operating conditions. They do not change the gear ratio or otherwise affect the operation of the equipment. For further information on WB-22 flotation tires, write to the Harma Tire & Rubber Corp., Dept. C&E, 1050 18th St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 54.

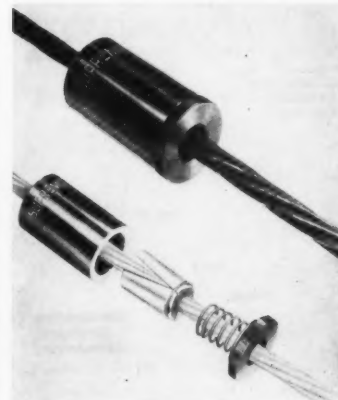


For more data on any item, circle indicated number on card at page 18.

### New strand chuck has instant grip

A new strand chuck for prestressing is offered by the Supreme Products Corp. The unit is said to grip instantly, with no tools required.

According to the manufacturer, the jaws automatically assume the proper grip on the strand, and the chuck is



designed to withstand all tensions encountered in prestressing. Exceptional ease of removal is another feature claimed.

The jaws are made of fine chrome molybdenum alloy steel with precision-cut thread, and may be re-used an indefinite number of times. The barrel of the chuck is of high-tensile steel, and works for both 7/16-inch and 3/8-inch wire strand.

For further information write to the Supreme Products Corp., Dept. C&E, 2222 S. Calumet Ave., Chicago 16, Ill., or use the Request Card at page 18. Circle No. 134.

### Device flashes warning when tire pressure drops

A device that flashes a dashboard warning when a dangerous drop in the pressure of a truck tire occurs is available from the Tel-Air Corp.

This metering device attaches to the hub of each wheel, and connects to the valve stem of either single or dual tires. Metering is pre-set for any desired pressure, and a small red dashboard warning light flashes an instantaneous signal if the pressure in any tire drops.

For further information write to the Tel-Air Corp., Dept. C&E, 4250 Harry Hines Blvd., Dallas, Texas, or use the Request Card at page 18. Circle No. 110.

For more facts, circle No. 282

## 120 "EUCS" at Oahe Dam...



1/2%  
haul  
duc-  
travel  
tors,  
com-  
the  
be a  
ard-  
heap-  
age a  
why  
vest-  
a bid



For all big tractor jobs — push-loading large scrapers, heavy dozing, ripping hard shale and pulling big equipment — the TC-12 is a top performer. Independent track drive, full power shift with Torqmatic Drives and a total of 402 h.p. delivered to the power train give this Euclid "Twin" unequalled work-ability. Western has had TC-12 crawlers in their fleet for over 3 years ... is using 18 of them at Oahe.



▲ A total of 518 h.p., Torqmatic Drives, power on all four wheels, big capacity and a loading assist by Twin-Power "Euc" Crawlers, add up to high speed production. Here a TS-24 gets a heaped load of about 20 bank yds. of heavy shale in just over a half minute. "Twin" availability has been 90% or better in spite of working 20 hours a day, six days a week in tough material.

Another application of Euclid "Twin-Power" is the 50-ton Model LLD. Western Contracting has used this size rear-dump for several years on big jobs such as the Indiana Turnpike, Ft. Randall, Gavins Point and Oahe Dams. With two 300 h.p. engines, each powering a separate axle through Torqmatic Drives, this "Euc" moves 50-ton loads over steep grades at fast travel speeds.

Ohio



The IH 460 tractor, on the left, has an IH Pippin 360 backhoe with new attachment for carrying the Joy pneumatic drill. On the right, another IH Pippin 360 is rigged with an orange peel bucket for cleaning catch basins.

## Preview new line of wheel tractors

After three years of research and development and at a cost of over \$22 million, the International Harvester Co. has come up with a completely new line of tractors. The units were previewed recently in Hinsdale, Ill., with the demonstration attended by some 8,500 dealers throughout this country and Canada.

Designed for more power and versatility, the commercial tractors are available in six power sizes and many different models.

The six new commercial tractors range in size from 12.8 engine horsepower for the Cub Lo-Boy, to 72 engine horsepower for the larger International 560. New power steering is a feature, as well as a wide selection of gasoline, LP gas, distillate, or diesel engines.

The larger models are equipped with a torque amplifier, a planetary gear unit which will give ten speeds forward and two in reverse. Without stopping or shifting gears, the operator can reduce the speed of travel and increase the pull power up to 45 per cent.

Another planetary gear assembly speeds up dozing and power loading. This "fast-reverser" attachment permits the operator to move backward and forward without shifting transmission gears. In any gear, the tractor backs away at speeds approximately 25 per cent faster than it moves forward.

Of special interest to contractors are two larger 6-cylinder models: the Model 460 utility tractor with 61 engine horsepower and the Model 560



Mounted on an International TD-6, a Drott 4-in-1 bucket utilizes its clam-shell action to pick up a big stump.

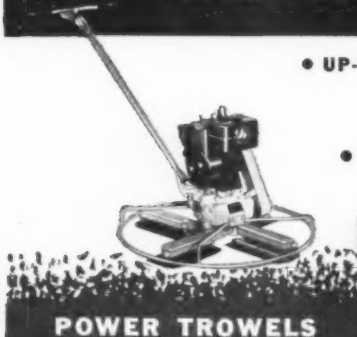
with 72 engine horsepower. Five forward speeds and one reverse are standard in both models.

The tractors may be equipped with a complete new line of International Wagner front-end loaders and Pippin backhoes. For the hydraulic backhoe, Pippin also makes a special clip to hold a pneumatic rock drill.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 100.

## HERE'S THE BIG NEW LINE OF *Kelley* CONTRACTORS EQUIPMENT

- UP-TO-DATE DESIGNS
- CAREFULLY ENGINEERED AND FULLY TESTED
- BUILT FOR ROUGH USE
- SPEEDS UP WORK... SAVES MONEY



POWER TROWELS

Six models to choose from... 2 de-luxe HYDRA TROWELS, 34" and 44" sizes, with fingertip blade control... and 4 super models with manually adjusted blade pitch: 24" Kelley Bantam, 29" Kelley Boy, the popular 34" Kelley Chief and the big 44" Kelley Commander... a size for every job.



POWER TAMPERS

Self-propelled... delivering 2400 impacts a minute. Two models: 18" wide shoe, and 36" wide shoe. For packing down earth backfill to maximum density next to foundations, on road-widening jobs, around culverts and in pipeline trenches. Also for finishing black-top driveways.



COMPACTORS

The new Kelley Compactor with "Compaction Control". An entirely new machine... larger, easier operating, faster and more powerful. For compaction-floating concrete floors, for keying in tough surface hardener materials, and for bonding dry-tamp topping to a base slab.



SPACE HEATERS

What a blast! From the brand new Kelley Hot Shot Space Heaters, one delivering 125,000 Btu/Hr and the other delivering 325,000 Btu/Hr. Let 'er blow outside... work goes on inside with Kelley Hot Shots! For work on walls, floors, scaffolds and hundreds of other construction jobs.

*Kelley*

### MACHINE DIVISION

The Wiesner-Rapp Co., Inc.  
285 Hinman Ave. Buffalo 23, N. Y.

Please send us information on Kelley products.

NAME \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

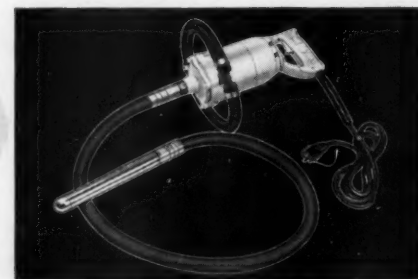
For more facts, use coupon, or Request Card at page 18 and circle No. 283

## FAST CHANGE



You can "go to any length" with the new White Lightning concrete vibrator—in seconds and without the use of adapters. Simply couple on a 3', 5', 7' or 12' shaft or any combination of shafts you please. Choose the head that is right for the job from a selection ranging from 1 1/4" to 2 3/8" in diameter. Completely portable. Weight: 25 pounds. Operates from any 110 volt AC or DC outlet.

## White LIGHTNING CONCRETE VIBRATOR

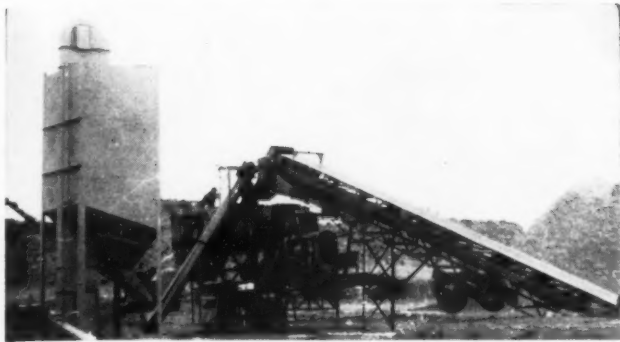


See your White distributor or write White Manufacturing Co., Elkhart 9, Indiana

For more facts, use Request Card at page 18 and circle No. 284

CONTRACTORS AND ENGINEERS





On the Hetherington & Berner stabilizers, push-button operation through the use of electric drives insures the uniform proportioning of materials into the mixer at all times.

### Large-capacity stabilizers are push-button plants

Hetherington & Berner, Inc., announce the addition to their line of asphalt equipment of two new large-capacity stabilizers.

One of these plants has a capacity of 300 to 400 cubic yards per hour; the other produces 200 to 250 cubic yards per hour. Both are unit-type plants, with individual units operated by either direct diesel or electric drives.

The feeder, aggregate conveyors, and mixer are wheel-mounted, and

may be operated in running position without jacking up on cribbing.

An electric generator set, driven from the diesel engine, is available on either of these mixers as optional equipment. Bulk-cement handling can also be provided, if desired.

For further information write to Hetherington & Berner, Inc., Dept. C&E, 701-745 Kentucky Ave., Indianapolis 7, Ind., or use the Request Card that is bound in at page 18. Circle No. 114.

### Mobile 2-way radiophone for 450 to 470 mc band

Motorola announces a new mobile 2-way radiophone operating in the 450 to 470 mc frequency band.

The unit features a transistorized power supply and a unified chassis design which combines transmitter, receiver, and power-supply portions of the unit on one chassis.

The new Motorola model weighs 34 pounds, and is packaged in a 10-inch housing, enabling both under-dash and trunk mounting. It provides 18 watts transmitter power output

and 3 watts receiver output. It is available in both carrier squelch and dual squelch Private Line (carrier plus tone-coded squelch) versions. The unit operates from a 12-volt electrical system, positive or negative ground.

For further information write to Motorola Communications & Electronics, Inc., Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 9.

## Need HOSE in a HURRY?

**Suction • Water • Steam  
Air • Multi-Purpose  
Discharge • Pile Driver**

Wherever your job is—whenver you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

ATLANTA 8, Ga. 477 Eighth St., N.E.	INDIANAPOLIS 4, Ind. 309 North Capitol Ave.
BALTIMORE 18, Md. 15 East 21st St.	LOS ANGELES 23, Calif. 3121 East 12th St.
BOSTON (Alls. 34), Mass. 12 Franklin St.	MEMPHIS 3, Tenn. 268 Madison Ave.
CHICAGO 10, Ill. 10 West Hubbard St.	NEW YORK 7, N. Y. 81 Murray St.
CINCINNATI 2, Ohio 49 Central Ave.	PHILADELPHIA 6, Pa. 311 North Randolph St.
CLEVELAND 15, Ohio 2731 Prospect Ave.	SAN FRANCISCO 24, Calif. 1352 Egbert Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.	ST. LOUIS 8, Mo. 4018 Olive St.
	SYRACUSE 3, N. Y. 739 Montgomery St.



### CONTINENTAL STEAM HOSE

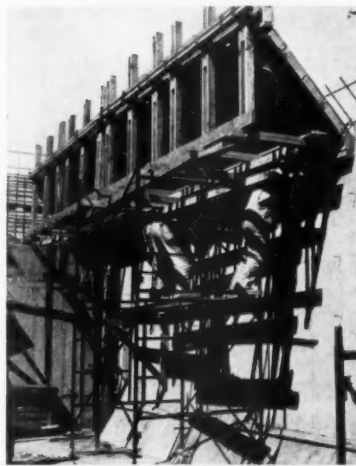
Built for work up to 100 p.s.i., this hose is tailor made with special heat-resistant rubber tube, plies of quality frictioned duck with heavy rubber separation and tough rubber cover. Sizes: 1/2", 3/4", 1", 1 1/4", 1 1/2", 2". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

**HOSE by CR  
CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 285

## Gang Forming Licks "Y" Wall Problem



### Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'9" high walls on tank addition to sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons panels, fillers and bay corners were ganged in 16-foot sections. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. J-8, Chicago 39, Illinois.

### MORE SAVINGS FROM SYMONS

For more facts, use Request Card at page 18 and circle No. 286

## Eagle Portable

**WASHING • CLASSIFYING • DEHYDRATING  
SECTIONS FOR SPECIFICATION SAND . . .**



## make money for owners all around the country!

Successful contractors and aggregate producers know that on many jobs **mobility means money!** The Eagle Portable Section can be quickly hauled from pit site to pit site, deposit to deposit, or across the country . . . has fifth wheel hitch for use with tractor truck. Easily positioned next to crushing and screening equipment. Operates in a dry pit or with a hydraulic dredge. Washes, classifies and dehydrates sand to meet rigid specifications. Capacity up to 200 tons per hour, depending upon gradation desired.

Send for new 48-page Catalog 58!

• **TOP . . .** Successful Kansas sand and gravel producer takes his Eagle Portable Washing Section to the job.

• **UPPER RIGHT . . .** Leading contractor uses Eagle Portable Section to process fine aggregate to meet Federal specifications in North Dakota. Can readily move when job is completed.

• **LOWER RIGHT . . .** Michigan producer processes aggregate to specification with Eagle Portable, which can be easily moved when deposit, changing market conditions, etc., dictate.



SINCE 1872

**EIW**  
EAGLE IRON WORKS

Get the complete story from  
your nearby Eagle Distributor!

**EAGLE IRON WORKS**

159 HOLCOMB AVE., DES MOINES, IOWA

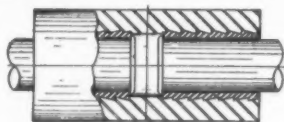
For more facts, use Request Card at page 18 and circle No. 287

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

## Product Parade

### STRESSRODS high tensile alloy steel bars for prestressed concrete

A unique process is used by RODS INC. in producing STRESSRODS high tensile alloy steel bars for use in prestressed concrete. Because of this process, STRESSRODS give low cost bars that are easily handled in the field.



Howlett Coupler-Pat. Feed.

HOWLETT Couplings used by Rods Inc. assure ultimate tensile strength for size of bars in assembly with nuts and couplings.

These devices utilize a principle which does not require threading the bar, and thus eliminates strain concentration and loss of fatigue strength at connecting and anchoring points.

The HOWLETT Wedge Nut used for anchoring employs the same principle as the coupling. It gives positive anchoring action and also provides for easy grouting through a large opening in anchor nuts. Grouting is faster with this anchor nut.

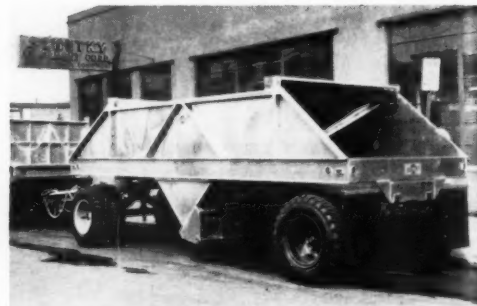
**FIELD COSTS ARE EXTREMELY LOW**

**RODS INC.**

706 FOLGER AVE., BERKELEY 10, CALIF.  
Ph: THornwall 3-3123

For more facts, use Request Card at page 18 and circle No. 288

Weight savings gained with this Schetky bottom-dump unit reportedly permit an additional payload of 2,320 pounds.



## GARRISON POWER STEERING

helps this **KENWORTH** jockey  
the **BIG ONES!**

Handling big tow loads like the Boeing 707 is made to order for this Kenworth Towing Tractor. With Garrison Power Steering on both front and rear wheels even this giant plane is jockeyed like a baby buggy.

On the Kenworth Towing Tractor, Garrison Power Steering provides maximum ease of handling and unusual maneuverability. It supplies a choice of two-wheel steering and four-wheel steering, or oblique (crab) steering merely by changing a selector. With 80% of the effort supplied by the Garrison hydraulic cylinders, operators get jobs done safer, faster, and with less strain on both men and machines!

Ask how your steering problem may be solved for easier operation and greater efficiency with GARRISON POWER STEERING...available for medium and heavy trucks, truck cranes, motor graders, wheeled material-handling, off-the-road equipment and specialized vehicles.



4609 East Sheila Street  
Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 289



### Built for SPEED and ECONOMY...

... that's the SHAWNEE "88" ... the backhoe with all the desirable features plus an economy price tag.

Take a look at the Shawnee "88" uninterrupted 180° swing with the lifetime compensation of wear feature. Time its speed and feel its smooth action. Here's a backhoe which is a result of 10 years of backhoe building experience ... fastest on the market today.



#### SHAWNEE "88" BACKHOE

- 180° uninterrupted swing
- 9'9" dumping height
- 16'6" reach
- 12' digging depth
- Replaceable bushings
- One bucket design for all jobs
- Individual hydraulic stabilizers
- Exclusive hidden bucket cylinder

#### SHAWNEE LOADMASTER LOADER

- 9' dumping height
- 3,500 lb. lift capacity
- 12" reach below ground level
- Double-acting cylinders, honed and burnished cases; chromed rods
- 10' maximum loading height
- 5" rollback

by

**SHAWNEE**

SHAWNEE MANUFACTURING COMPANY, INC.  
1947-M North Topeka Avenue Topeka, Kansas



For more facts, use Request Card at page 18 and circle No. 290

### Announce bottom dumper made of welded aluminum

A welded aluminum bottom-dump truck for hauling and spreading gravel, hot asphalt mix, and other highway construction materials is announced by the Schetky Equipment Corp.

The 3,680-pound unit has a capacity of 9 cubic yards. It is 17 feet 7 inches long and 7 feet 4 inches high.

The truck has a 90-inch-wide V-shaped hopper completely free from any interior bracing across the full width of the chassis, thus permitting a uniform dump while the trailer is moving.

For further information write to the Schetky Equipment Corp., Dept. C&E, 1810 Southeast Tenth Ave., Portland 14, Ore., or use the Request Card at page 18. Circle No. 105.



### Concrete admixture is retarding agent

Sonotard, a retarding agent recommended for use in precast, prestressed, and post-tensioned concrete, is available from L. Sonneborn Sons, Inc.

This admixture contains no calcium chloride, and may be used with either Type I or Type III cement.

According to the manufacturer, Sonotard produces greater strength under conditions of accelerated curing at elevated temperatures; permits water-cement reduction, with no sacrifice in workability, and in conformity with Abrams Law; and permits cement economy under these conditions with no strength sacrifice.

For further information write to L. Sonneborn Sons, Inc., Building Products Division, Dept. C&E, 404 Fourth Ave., New York 16, N. Y., or use the Request Card at page 18. Circle No. 31.

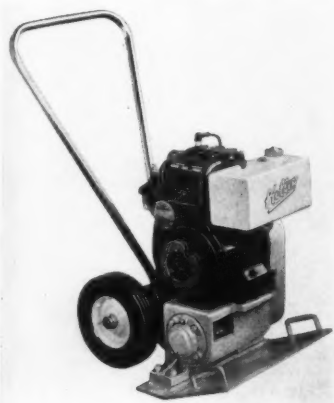
### Compact power tamper is self-propelled

A self-propelled, compact power tamper for packing down earth backfill in trenches and around foundations and piers, and for blacktop paving and patching, is announced by the Kelley Machine Division of the Wiesner-Rapp Co., Inc.

The Model 18KT has an 18-inch-wide shoe, with a 24-inch shoe also available. To prevent blacktop sticking to the shoe, a special heater at-

CONTRACTORS AND ENGINEERS





tachment can be furnished.

The Kelley power tamper is powered by a 4-cycle 3.5-hp gasoline engine said to deliver 2,400 one-ton impacts per minute. Shock-absorbing handles prevent transmission of vibration to the operator, according to the manufacturer.

For further information write to the Kelley Machine Division, Wiesner-Rapp Co., Inc., Dept. C&E, 283 Hinman Ave., Buffalo 23, N. Y., or use the card at page 18. Circle No. 87.

#### Off-the-road truck tire increases wear, traction

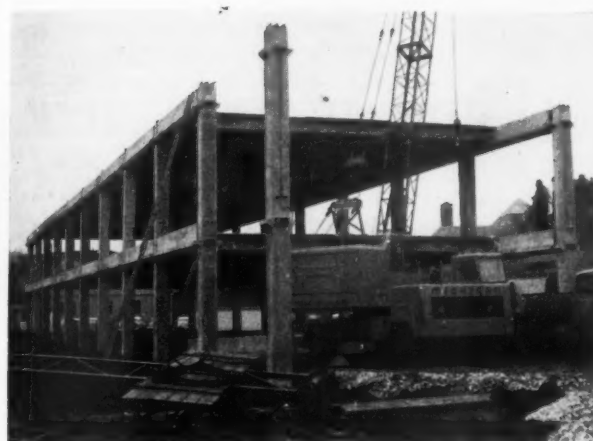
A new off-the-road truck tire, squared off and widened in the shoulder area to give improved wear and traction, is announced by The Goodyear Tire & Rubber Co.

Named the Super Hard Rock Lug, the tire is made in all wide-base sizes and is available in tubeless and tube-type versions. It is built with special cut-resisting rubber compounds and triple-tempered 3-T nylon cord.

For further information write to The Goodyear Tire & Rubber Co., Dept. C&E, 1144 E. Market, Akron 16, Ohio, or use the Request Card at page 18. Circle No. 126.



Precast and prestressed members comprise the entire structural frame of the Joliet Technical-Vocational High School, Joliet, Ill. Supplied by Crest Concrete Systems, Inc., the double-tee slabs used spanned 40 feet with a 100 and 130-pound live load. For further information about its prestressed building members, write to Crest Concrete Systems, Inc., Dept. C&E, P. O. Box 38, Lemont, Ill., or use the Request Card at page 18. Circle No. 56.



## Want an easy-to-install drainage structure?

use Corrugated Metal

You don't need expensive handling or lifting equipment to install a Corrugated Metal Pipe Structure. The pipe comes in long lengths ready to lay, and since it is light and easy to handle, requires less time to install. For example, three men can properly install a 20' length of Corrugated Metal Pipe in a matter of minutes. Corrugated Metal Drainage Products made from USS Galvanized Steel Culvert Sheets do not require "kid glove" handling. If dropped, they will not crack or spall. There are no losses due to breakage. Consequently, it is only necessary to order the lengths required to complete the job.



Write for our free booklet "USS Culvert Sheets" which tells you how to get the kind of service you can expect from Metal Drainage Structures made from USS Galvanized Steel Culvert Sheets. It's loaded with information about selection of correct structure sizes, preparing foundations and installation procedure. For your free copy, write to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

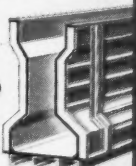


United States Steel Corporation—Pittsburgh  
Columbia-Geneva Steel—San Francisco  
Tennessee Coal & Iron—Fairfield, Alabama  
United States Steel Supply—Steel Service Centers  
United States Steel Export Company

**United States Steel**

### ECONOMY STEEL FORMS

for  
precast  
PRESTRESSED  
concrete



Above: Skeleton drawing of Economy Steel Forms used in producing standard AASHTO precast prestressed highway beams.

With Economy Steel Forms, you can get into the profitable precast prestressed concrete business with a moderate investment. Send coupon below for catalog.

OTHER FORMS FOR RENTAL OR PURCHASE



Economy Forms Corp.  
Box 128, H. P. Station  
Des Moines, Iowa

Please send catalog on Economy Steel Forms for precast prestressed concrete, as well as address of nearest sales office.

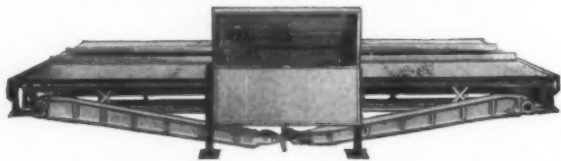
Name \_\_\_\_\_  
Firm name \_\_\_\_\_  
Street address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon or circle No. 291

## Product Parade

For more facts on these products, circle the indicated number on the Request Card at page 18.

### WINSLOW—PORTABLE TRUCK SCALE THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

**WINSLOW SCALE COMPANY**

P.O. Box 1198  
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 292

Rides with the bit through rock  
...speeds big bore hole cuts...

## GARDNER-DENVER

### "MOLE-DRIL"\*

\*TRADE-MARK

Here's added power for your rotary rig—hard-hitting, in-the-hole power. "Mole-Dril" speeds blast hole drilling in open rock cuts . . . and deep hole drilling in hardest rock.

**It's easy to use**—the "Mole-Dril" screws directly onto the bottom of standard drill pipe . . . a tungsten-carbide "X" bit screws directly onto drill tappet. That's all the "make-ready" it takes to send the "Mole-Dril" through rock.

**It's powerful**—"Mole-Dril" delivers more foot-pounds of energy to the bit than any other drill of its size. Every pound of hammer energy is transferred directly to the bit.

**It's rugged**—the "Mole-Dril" has only three moving parts, nine major parts. This simple, rugged construction gives the "Mole-Dril" lasting deep hole drilling durability.

#### Two models available:

Model AM4 for drilling 4 3/4" diameter hole.

Model AM6 for drilling 6 1/2" diameter hole.

Write for bulletin.

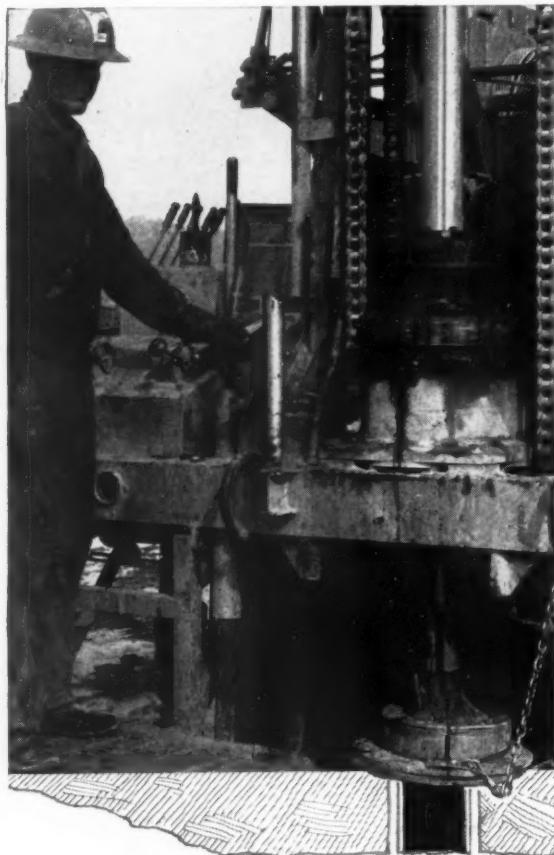


ENGINEERING FORESIGHT—PROVED ON THE JOB  
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

**GARDNER-DENVER**

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Canada



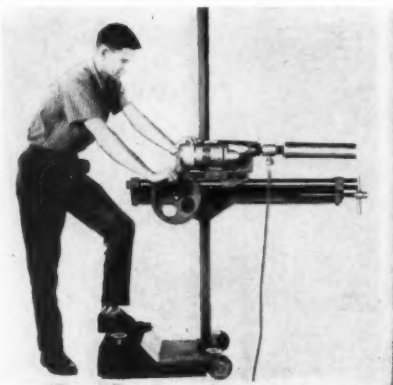
#### "Mole-Dril's" positive hole cleaning action

Air at full line pressure flows through drill's air blowing tube directly to bit . . . this direct air stream keeps cutting face clean regardless of drilling depth.

Drill exhaust air passes out up-cast air ports and gives cuttings an additional out-of-the-hole boost.



The new Molco machine will drill holes up to 6 inches in diameter through concrete, in any direction.



### Concrete-drilling machine drills in any direction

A new lightweight concrete-drilling machine that swivels 360 degrees to allow drilling in any direction is announced by Molco Drilling Machines, Inc.

Using special thin-wall diamond core bits, this machine reportedly will drill holes as large as 6 inches in diameter through concrete or any other hard building material at the rate of one inch per minute.

Core drilling machines which presently drill only horizontally can be converted to 360-degree drilling by a special kit.

For further information write to Molco Drilling Machines, Inc., Dept. C&E, 1100 20th St. N. W., Washington, D. C., or use the Request Card at page 18, Circle No. 135.

### Double-tee form header assembly

A new Form-Crete dual header assembly and cable spacer for pre-stressed double-tee forms is offered by the Food Machinery & Chemical Corp.

The face plate is shaped to fit the

### PRESTRESS MANUFACTURERS

Your dependable manufacturing source for jacking rods up to 3 1/2 dia. x 24 ft. long.

Also nuts, washers, split nuts, couplings, turnbuckles and special hardware built to your specification.

For Fast  
Economical Service  
Call or Write

**MIDLAND MACHINE  
CORP.**

519 E. William St.  
Decatur, Illinois  
Phone 8-6312



Safe working load chart for  
rods with various thread types.

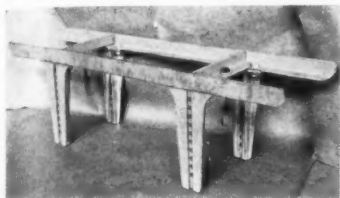
\* Yours for the asking

For more facts, circle No. 294

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 293





tapered contours of the channels, particularly the top curve, so that there are no open spaces. Each of the plates is in two sections and is adjustable so that it can be expanded or compressed to fit snugly against the sides of the channels. The width between the two plates can also be adjusted to fit any variations of the form.

The unit is fitted with a locking clip to hold it in the proper plane.

For further information write to the Food Machinery & Chemical Corp., Dept. C&E, P. O. Box 1718, Lakeland, Fla., or use the Request Card at page 18. Circle No. 73.

### New 6-inch transit offers many features

A 6-inch Eagle transit with a 20-second or 1-minute vernier reading is offered by the Texas-Asiatic Import Co.

This Japanese-built unit comes equipped with stadia arc, reversion telescopic vial, and ribbed horizontal

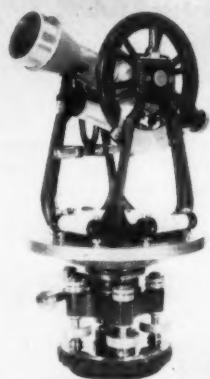


plate. All parts except compass, circle guard, and objective lens outer tube are made of solid bronze.

For further information write to the Texas-Asiatic Import Co., Dept. C&E, 2127 Fort Worth Ave., Dallas, Texas, or use the Request Card at page 18. Circle No. 136.

### Concrete-softening agent speeds breaking, drilling

Chem-Break, a chemical said to exert a solvent action on portland cement and other masonry surfaces, is offered by the Lee, Revere & Van Buren Chemical Co.

The chemical is simply dissolved in cold water and poured onto the concrete surface. According to the manufacturer, it is safe to use near brick and metals, and gives off no fumes. It is especially recommended for concrete breaking and drilling work.

For further information write to the Lee, Revere & Van Buren Chemical Co., Dept. C&E, 432-436 W. 70th Terrace, Kansas City 13, Mo., or use the Request Card at page 18. Circle No. 83.

Horsepower has been increased to 335, and capacity boosted to 21 yards struck and 28 yards heaped, on the Model B Tournapull. The new standard engine is a Cummins 6-cylinder 4-cycle diesel. According to the manufacturer, the Model B with standard step gear transmission is now capable of low-range speeds up to 20.7 mph; in high range, top speed has been increased to 30.1 mph. For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 57.



## LIMA...built to stay on the job-keep output up, costs down

Every day Limas throughout the world are proving their worth in every type of excavating or crane work. Carefully engineered for modern, high-speed operation, these rugged, powerful machines handle the toughest stripping, digging, loading and lifting jobs with effortless speed. Their built-in stamina assures high output with lowest downtime. Easily maneuverable they move and work in the tightest spots, getting jobs done well ahead of schedule. Fingertip precision air controls pave the way for smooth, easy operations.

Torque converter power take-off with its superior operating qualities is available on all Types. Lima quality design and construction extras make for profitable, efficient operations with minimum downtime. There's a Lima Type and size for every job—shovels to 6 cu. yds., cranes to 110 tons and draglines variable. Smaller capacities are available on rubber. For full details, contact your nearby Lima distributor, or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



Limas are available in three types of mountings—crawler, wagon or truck—for all types of service.



DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN · LIMA · HAMILTON**

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 295





Men swab Poco soluble compound on metal forms in the yard of the Hardaway Contracting Co., Port Tampa City, Fla.

### Concrete-curing compound is dual-purpose membrane

A white-pigmented curing compound for highways and other exterior concrete surfaces is available from the A. C. Horn Cos.

The dual-purpose compound, Horn-cure 40W, reportedly enables concrete to retain 95 per cent or more of the mixing water for 7 days, permitting the concrete to develop proper compression and flexural strength. Because it reflects the heat of the sun, it prevents uneven thermal expansion and premature cracking of the con-

crete. The white pigmentation also insures uniform coverage by simple visual observation.

A membrane, applied by spray in a single operation, Horn-cure 40W eliminates the use of burlap, sand, and straw, and does not require watering while the concrete sets.

For further information write to A. C. Horn Cos., Dept. C&E, 750 Third Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 125.



### Parting lubricant for concrete forms

Poco soluble compound, a parting lubricant for metal concrete forms, said to produce an exceptionally smooth finish on precast and prestressed members, is available from The Pure Oil Co.

With forms having a sharp radius, or intricate shapes, Poco eliminates blow-holes or pin-holes, the manufacturer states. It improves the flow properties of the concrete and decreases the air entrainment at the surface.

The compound reportedly permits easy and clean form stripping, and is easily applied by spraying, brushing, or swabbing.

For further information write to The Pure Oil Co., Dept. C&E, 35 E. Wacker Drive, Chicago 1, Ill., or use the Request Card at page 18. Circle No. 19.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

**SMALLEST HEAD EVER  
MADE FOR PRECAST  
AND PRESTRESSED  
CONCRETE PRODUCERS**



'JUNIOR'

VIBRATOR



One man operation  
saves time, money

Smallest vibrators ever  
made... weigh only 20 lbs.

3/4" and 1" heads are available for use in very restricted spaces. 1 1/4", 1 3/8", 1 1/2", 1 5/8" heads for use with low slump mixes where space permits.

Electrical component parts by G.E. Motor hung in shock-resisting springs. Operates from any 110 V. light socket.

WYCO "Junior" Vibrators are revolutionizing concrete placing methods by making possible the use of very low slump mixes in narrow forms, and other restricted places. The small diameter heads have the "kick" of large vibrators.

Two new larger WYCO "Junior" vibrators are now available in 3/4 H.P. and 1 H.P. units. These are also one man vibrators and are equipped with 1 1/2" and 1 3/8" heads.

Write for WYCO Catalog No. 58-V

**WYZENBEEK & STAFF, INC.**  
223 N. CALIFORNIA AVE.  
CHICAGO 12, ILL.

For more facts, circle No. 296

**It's the TAMPO TEAM  
for**



**SELF PROPELLED PNEUMATIC**

**PNEUMATIC TIRED ROLLERS**

**50 TON COMPACTORS**

**SHEEPSFOOT ROLLERS**

A complete line of efficient TAMPO compaction equipment is available through your local dealer to meet the flexibility and variety required for every job condition or specification. Write for latest bulletins.



**MANUFACTURING COMPANY**

DEPT. 5 • P. O. BOX 2340 • 1146 W. LAUREL ST.  
SAN ANTONIO, TEXAS • PHONE: PE-3-9171

For more facts, use Request Card at page 18 and circle No. 297

**McCARTHY AUGER DRILLS...**

**...for  
EVERY  
PURPOSE**



Heavy-Duty Vertical auger drill gives you more profit per job by drilling from 3 to 24 in. diameter holes 400-800 ft. per day.

Trench-type auger drill speeds pipeline work by drilling under roads, RR beds; readily equipped with pipe-pusher.



These two McCarthy Auger Drills speed work and cut costs in a variety of contracting jobs—blast hole, foundation and deep post hole drilling, dewatering, exploration; and underground pipeline installation. Bid lower, work faster and profit more with these two great McCarthy Auger Drills. Contact your nearest representative or write direct for Bulletin M-100 (vertical) and Bulletin M-107 (trench-type).

Manufacturer of Drilling

Equipment Since 1901

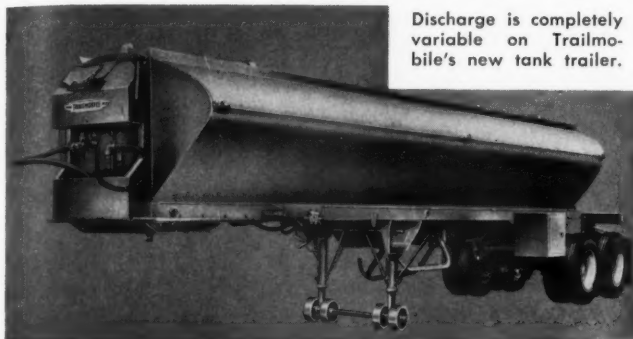
**THE SALEM TOOL CO.**

806 S. ELLSWORTH AVE. • SALEM, OHIO, U. S. A.

For more facts, use Request Card at page 18 and circle No. 298

CONTRACTORS AND ENGINEERS





Discharge is completely variable on Trailmobile's new tank trailer.

### Bulk-cement tank trailer has hydraulic discharge

A new all-steel bulk-cement tank trailer is announced by Trailmobile, Inc. The unit features a completely variable, hydraulically powered discharge system, with a two-stage step-down, continuous-contour design.

Besides hydraulic control, the new system offers a third screw. The independent control of each screw in either direction permits freeing of screws if they become load-bound during the discharge operation. This arrangement also allows for optional center discharge.

Other specifications include four 20-inch-diameter fill hatches with watertight, foot-operated covers.

For further information write to Trailmobile, Inc., Dept. C&E, 31st and Robertson Ave., Cincinnati 9, Ohio, or use the Request Card at page 18. Circle No. 13.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

### Solid wire-rope thimble for pins up to 2½ inches

A new solid wire-rope thimble with a large radius to minimize rope bending is offered for use with open sockets, wedge sockets, and the new Crosby-Laughlin boom pendant clevis.

A steel casting, the new thimble is



available for all sizes of wire rope from ½ inch to 1¾ inches, for use with pins from 1 inch to 2½ inches in diameter.

The manufacturer reports that a special casting process assures uniform, smooth-sided pin holes and an unusually smooth score in every thimble.

For further information write to the Crosby-Laughlin Division, American Hoist & Derrick Co., Dept. C&E, Box 570 FY, Fort Wayne, Ind., or use the Request Card at page 18. Circle No. 137.

SEPTEMBER, 1958

### Plastering machine has 3-cfm capacity

A self-contained all-purpose plastering machine, designated Plaster-Master Model D, is available from the Santa Anita Mfg. Corp.

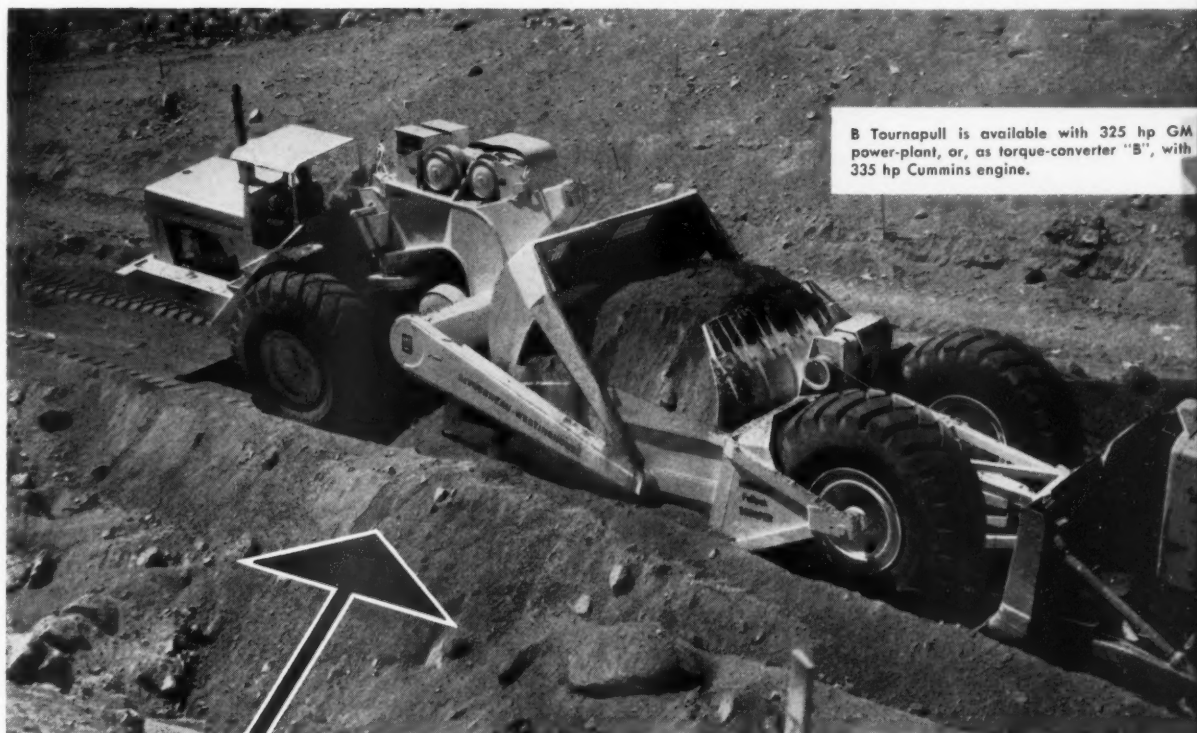
Standard equipment for the unit includes 75 feet of hose, gun, sifting screen, and towbar. Power is supplied by a Wisconsin 18-hp 2-cylinder engine.

According to the manufacturer, the Model D will pump all plastering materials: straight sand, lightweight ag-

gregates, or mixtures, with hardwall gypsum, portland cement, or other binders. The unit has a pumping capacity of 3 cfm.

The Model D is 46 inches high, 46 inches wide, and 77 inches long (without towbar).

For further information write to the Santa Anita Mfg. Co., Dept. C&E, 4961 Double Drive, Temple City, Calif., or use the Request Card at page 18. Circle No. 8.



B Tournapull is available with 325 hp GM power-plant, or, as torque-converter "B", with 335 hp Cummins engine.

## This scraper loads more pay-yards...faster... because it makes better use of its "horses"

Compare BIG scrapers available today, and you'll note that most of them offer engines in the 300 horsepower range. This "flywheel hp," however, is only *part* of the scraper power-picture. *More* important... as far as load size and loading speed is concerned... is how much of that power is *wasted*, and how much is actually *used*.

Consider, for instance, the 325 to 335 hp LeTourneau-Westinghouse B Tournapull® with 28-yd Fullpak® scraper. This machine gets *bigger loads faster* because it makes *fullest possible use* of power — its own, and that of its pusher. Here's how...

#### Low, wide bowl cuts power loss

Its Fullpak scraper design, for instance, is an important power-saver. Low and wide, it lets dirt flow back into the bowl almost on a straight

line. With blade in ground, Fullpak floor has a rise of only 1°, front to back. That means that more prime-mover power can be concentrated on *pulling* and *cutting*, less on *lifting*.

Because Tournapull's push-block is low, maximum pusher-thrust is directed squarely behind the blade where it's needed. Pusher-plate, push-block, and scraper-blade "line up" for concentration of maximum power. Direct line of push also eliminates "humping"...steadies the scraper for easier loading and more accurate grading.

Construction details of the "B" also cut power-waste, because they reduce friction-loss. Heavy-duty roller bearings, for instance, are used throughout. Welded steel construction eliminates force wasted in twisting and distortion. Tournapull's

simple design eliminates a lot of heavy hardware, whose dead-weight robs you of power. And drive-train is short-coupled, efficient... doesn't waste power in detours between engine and work application.

#### "Electrics" use hp only when needed

Electric controls are horsepower savers, too. Instead of continually dragging on your engine, as hydraulics do, current for Tournapull scraper controls is generated only when needed. And the *instant* response of "electrics" eliminates wasteful "build up" of power for operating scraper controls.

Look at the *whole* power-picture when you compare scrapers. For complete information on the B 'Pull', see your nearby LeTourneau-Westinghouse Distributor.

\*Trademark BP-1748-DC-1



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

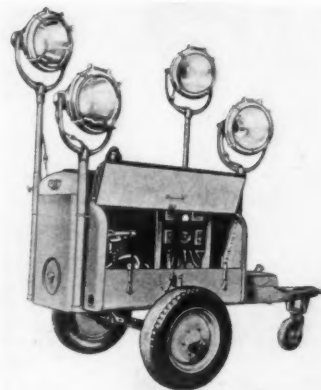
*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**

For more facts, use Request Card at page 18 and circle No. 299



A new spring-mounted oscillating front axle is standard on the Lorain  $\frac{3}{4}$ -cubic-yard self-propelled Model SP-107 rubber-tire excavator. This new design allows the front wheels to hug the ground so that the four-wheel-drive can apply the tractive effort necessary to carry the unit over rough or soft terrain. When maximum crane lifting capacities are needed for crane operation, the front spring can be "locked out" easily, to give solid-axle, full 7-ton capacity over front, rear, and sides without setting outriggers. For further information write to the **The Shovel Co.**, Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 66.



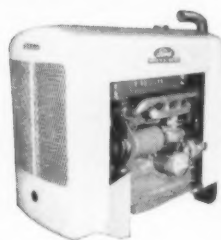
### Portable floodlight unit generates own power

A floodlight trailer unit that generates its own electric power is announced by Pacific Mercury.

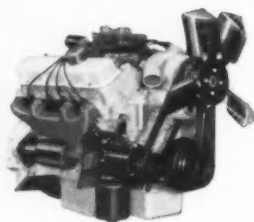
Designated Mobilite, this unit is equipped with four floodlights, and is available with 320,000 or 480,000 candlepower. The lights can be individually adjusted to any desired height up to the maximum 18-foot extension, and pivot in a complete circle.

For further information write to Pacific Mercury, Dept. C&E, 14052 Burbank Blvd., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 26.

## From 134 to 534 cubic inches...



there's a **FORD INDUSTRIAL ENGINE** to meet your every power need!



• Whether you farm... drill for oil... build highways... or manufacture, there's a Ford Industrial Engine that can make your operation even more efficient and more profitable.

Take Ford's new Super Heavy Duty V-8's. Built to handle the big jobs easier at less cost, they have new fully machined combustion chambers... new fuel induction systems... new lubrication systems... and provide more horsepower per pound of engine weight than ever before possible. These are typical of the many engineering

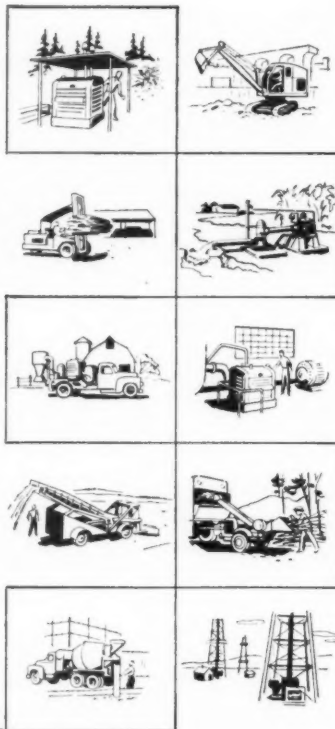
advances you'll find in all Ford Industrial Engines. If you're considering new power or repowering, it'll pay you to check Ford's full line of 4-, 6- and V-8 cylinder engines... including the Ford 220-cu. in. and 330-cu. in. Diesels. Most models are available as engine assemblies or power units, foot- or skid-mounted.



**YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED**

Write for complete information: INDUSTRIAL ENGINE DEPARTMENT  
**FORD Division of FORD MOTOR COMPANY**  
P. O. BOX 598, DEARBORN, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 300



### New device announced for quick form alignment

A new device for form alignment, said to permit preliminary and final form adjustment without disturbing braces, is offered by Superior Concrete Accessories, Inc.

Providing a swivel action for quick positioning and adjustment, the Ad-



justa-Brace consists of two units connected by a 2x4, or 2x6, or a 1-inch-ID pipe. Either unit may be attached to the wall form, or to the stake, as field conditions dictate.

The manufacturer points out that the Adjusta-Brace permits maximum adjustment in any direction, at any angle.

For further information write to Superior Concrete Accessories, Inc., Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 44.

### New concrete screed speeds crown finishing

Designed to speed rigidly specified crown finishing on highway and airport paving projects, a new quickly adjustable concrete finishing screed is available from the Blaw-Knox Co.'s Construction Equipment Division.

For use with the firm's Model XE concrete paving finisher, the screed is

## THE MORSE-STARRETT WIRE ROPE CUTTER



Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

### FAST

Especially designed cutting blade and dies of the finest steel assure fast cutting action.

### EASY

Anyone can operate it. The hammer principle eliminates any special skill requirements.

### SAFE

The enclosed cutting blade locked in the body of the cutter assures perfect safety.

### PORTABLE

Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO  
**MORSE-STARRETT PRODUCTS COMPANY**  
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, circle No. 301

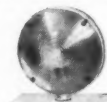
## ESCO FLARE TRANSISTOR LIGHTS

"The Brightest of Them All"

- Heavy-duty hermetically sealed transistor unit—even operates under water.
- Exclusive Economy Battery in Jumbo models gives 50% more battery life for same price as others.
- Lower initial cost. Troublefree operation makes it economical to operate.
- Heavy-duty case and die cast head.
- Exclusive troublefree switch built right in head.
- Esco Flare Barricade for Jumbo and Deluxe models.
- Exclusive features make Esco Flare the best transistor light you can buy—and there's one for every requirement.



Jumbo 7" Light



DeLuxe 7" Light



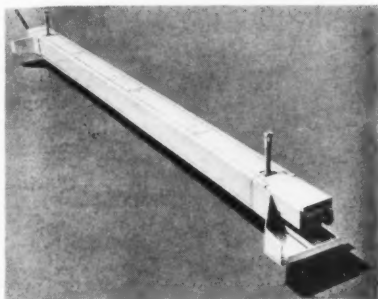
Write for literature and prices. Distributorships available.

FULLY GUARANTEED

**ELECTRONIC SPECIALTIES COMPANY**  
BATAVIA 12, ILLINOIS

For more facts, circle No. 302





The rigidity of the Blaw-Knox screed, and its cam mechanism, reportedly assures a specific contour in transition from crown to flat and flat to crown at intersections and curves.

said to feature simple cam adjustments to produce over 18 crowns, as well as good crown-to-flat-to-crown transition for continuous, rapid finisher operation.

A graduated needle-pointer gage facilitates fast, accurate adjustment of the cam mechanism, which can be set for circular, parabolic, or modified V crowns with a minimum of time and effort. A reversible ratchet wrench switches the screed from flat to crown, and back, as required.

The Model 5M screed is adjustable from 20 through 25-foot road widths in 6-inch stages.

For further information write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 64.

### Portable aggregate plant produces up to 100 tph

The Nomad portable aggregate plant is announced by Engineered Equipment, Inc.

The unit features a basic 5-yard batcher, available with or without integral high-capacity conveyor, for front-end-loader charging. This unit comes complete with a dial scale which enables the loader operator to make visual checks of accumulated weighing.

Simply by adding a "bolt-on" 30-ton surge bin, charging time is cut to seconds and capacities increased to as high as 100 tph, the manufacturer claims.

Pneumatic-tire trailer wheels and towing hitch are optional equipment.

For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card that is bound in at page 18 of this issue. Circle No. 61.

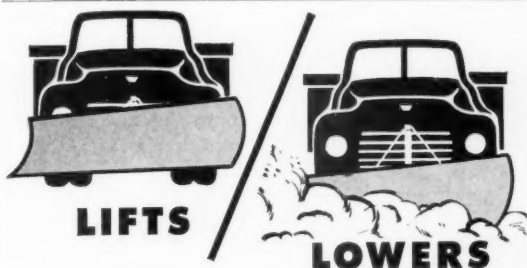
### Forged scarifier tips for motor graders

Forge-Temp replaceable forged scarifier tips for motor graders have been added to the Bucyrus Blades line. The forged tips offer an improved toughness and shock resistance, with high strength, according to the company.

For further information write to Bucyrus Blades, Inc., Dept. C&E, Bucyrus, Ohio, or use the Request Card at page 18. Circle No. 94.



On the recent construction of the Wolcott Avenue Bridge near Hartford, Conn., American Super-Tens stress-relieved wire was used for the cast-in-place prestressed slab and girder work, done on the site. The project reportedly was made easier by the use of Super-Tens wire since it has no tendency to return to the original coil diameter, thus permitting easier, accurate placement in the forms. For further information on Super-Tens stress-relieved wire, write to American Steel & Wire, division of United States Steel Corp., Dept. C&E, 1420 Rockefeller Bldg., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 119.



**ONE MAN Operates Snow Plow From the Cab... AUTOMATICALLY!**

POWER **MONARCH HYDRAULIC** CONTROLS

Instant action! Snow removal is easier, faster, more efficient. Automatic snow plow operation right from the truck or jeep cab. Battery-Operated or Fan-Belt Driven Models. See your dealer or write for full information.

**MONARCH ROAD MACHINERY COMPANY**  
1331 Michigan St., N. E. — Grand Rapids 3, Michigan

For more facts, circle No. 303

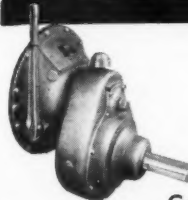
Re-Power With **FUNK** Modular Units

**FUNK TORQUE CONVERTERS**



Extend the life of your engines, prevent stalls, eliminate damaging shock loads — re-power with FUNK Torque Converters. Compact units, fit SAE housings. FUNK Standard Flange System easily adapts other FUNK units for your power needs.

**FUNK GEAR REDUCTIONS**



Small, popular-make high speed engines equipped with low-cost FUNK Gear Reductions develop the same power output at substantial savings over large expensive slow speed engines. Eliminate expensive and dangerous V-belt and chain drives. Exclusive FUNK Straddle Mounted Pinion. Proved Performance.

Consult Your Dealer or Write

**FUNK MFG. CO.**

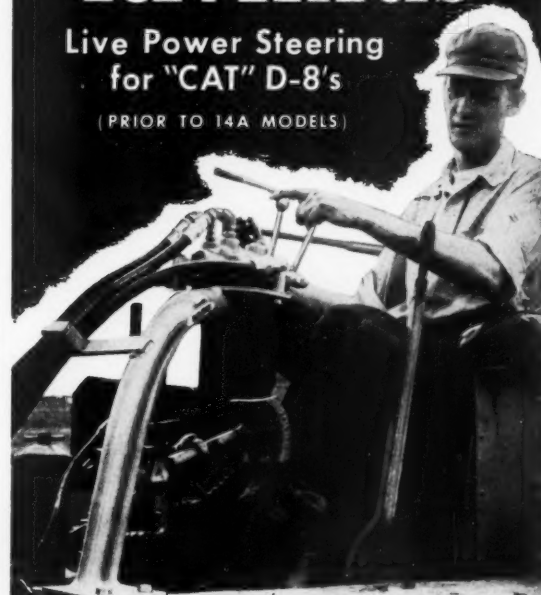
P.O. BOX 577-B  
COFFEYVILLE  
KANSAS

For more facts, circle No. 304

**NEW! LOW COST!**  
**Rivinius**

Live Power Steering for "CAT" D-8's

(PRIOR TO 14A MODELS)



**TIME-SAVER:** Operators report they can operate D8's one, sometimes two speeds faster with hydraulic, fingertip control Rivinius Live Power Steering. Levers move only 1½"; return automatically when released.



**MAN-SAVER:** Operator fatigue goes down...performance goes up! Rivinius Live Power Steering provides closer, faster control of D8 power and maneuverability.

**CLUTCH-SAVER:** On each turn, the D8's clutches are engaged smoothly into complete seizure...engagement and disengagement is positive for no wasteful slippage and clutch wear.

**DOLLAR-SAVER:** This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, hoses, brackets and hardware.

SEE YOUR CATERPILLAR DEALER NOW OR WRITE

**Rivinius, inc.**

EUREKA, ILLINOIS

For more facts, circle No. 305



A 72-inch-wide roll is an important feature on the Model VR-72-T. The unit has an approximate net weight of 8,100 pounds.

## STOW PRODUCTS SPEED UP PRECAST WORK

### POWER MIDGET VIBRATOR



Many manufacturers of precast concrete products have turned to the Power Midget to solve the problem of vibrating concrete in narrow forms. The Power Midget, developed by Stow Manufacturing Co., has a head only 1 1/4" in diameter, capable of working in the narrowest forms. It really packs a wallop... powered by a 1/2-HP Universal motor, with trigger switch, which drives the head at 12,000 VPM. Thoroughly field tested, the Power Midget is ideal for precast work, perfect for any job where narrow forms are required, such as bank vaults, manholes, etc.



### TWIN BEAM VIBRATING SCREED

Stow Manufacturing Co. also developed the revolutionary Twin Beam Screed, used extensively for finishing short spans such as sidewalks and precast slabs. Working with this Twin Beam Screed gives the effect of making two passes at once. The vibrating head transmits the vibration evenly to both beams. Thus as the screed is worked along, the first beam strikes off

the concrete, while the second beam gives the concrete a final finish! For more information on the Power Midget Vibrator, or the Twin Beam Screed, contact your Stow Distributor. In most cities, you'll find him listed under "Concrete Vibrators" in the yellow section of your telephone directory. Or, if you prefer, send in the coupon below.

**STOW MANUFACTURING CO.** 40 Shear Street, Binghamton, N. Y.

Please send me literature and specifications on the Stow Power Midget Vibrator and the Twin Beam Screed.

NAME .....  
COMPANY .....  
STREET .....  
CITY ..... STATE .....

For more facts, use coupon, or Request Card at page 18 and circle No. 306

### New vibratory roller has 72-inch-wide roll

The Model VR-72-T high-frequency vibratory roller is announced by the Essick Mfg. Co.

Designed to be pulled by tractors equivalent in size to the Caterpillar D4, the machine features a roll 72 inches wide, with a 51-inch diameter. Its vibratory shaft reportedly rotates at 2,320 rpm.

Power is supplied by a Continental Model F-226 engine, developing 59 horsepower at 1,800 rpm. The manu-

facturer states that the VR-72-T travels at speeds from 1 to 4 mph, depending on the material.

The 8,100-pound machine has overall measurements of 12 feet 4 inches long, 7 feet 5 inches wide, and 5 feet 6 inches high.

For further information write to the Essick Mfg. Co., Dept. C&E, 1950 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 85.

### New air-operated drill for hard rock formations

The Hammerdrill, an air-operated impact tool for high-speed drilling in hard rock formations, is available from the Mission Mfg. Co.

The tool is offered in both low and high-pressure models, and reportedly can be adjusted to deliver up to 6,000 strokes per minute. There are only three moving parts in the low-pressure unit; in the high-pressure unit, only two. Either model can be used on any standard rotary rig with suitable air-compressor capacity.

An important component of this bottom-hole tool is the specially de-

signed Hammerbit, through which all air exhausts against the cutting face. The air holes are positioned to blast chips off the bottom, and the bit, according to the manufacturer, may be resharpened in the field many times. Bit sizes are 4 1/2 and 4 3/4 inches for the 3 3/4-inch-OD tool; and 6, 6 1/2, 6 3/4, and 7 inches for the 5 1/4-inch-OD unit.

For further information write to the Mission Mfg. Co., Dept. C&E, P. O. Box 4209, Houston, Texas, or use the Request Card at page 18. Circle No. 20.

## ROCKFORD



### MORLIFE® CLUTCHES

Help Heavy-Duty Tractors  
Keep "Busy at Both Ends"

Because ROCKFORD Morlife® CLUTCHES provide 100% more torque grip than previous type clutches of equal size, they help road machines do double duty. Easier operation is accomplished by reducing the required engaging pressure. 50% better heat disposal avoids down-time caused by burned or warped plates. Numerous maintenance records prove that MORLIFE clutches operate four to ten times as long without adjustment or plate replacement. Let this NEW type clutch help keep your heavy-duty machines ON the job and OUT of the shop.

**SEND FOR THIS HANDY BULLETIN**  
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

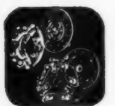
**ROCKFORD Clutch Division BORG-WARNER**

314 Catherine St., Rockford, Ill., U.S.A.  
Export Sales: Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

## CLUTCHES

For more facts, use Request Card at page 18 and circle No. 307

CONTRACTORS AND ENGINEERS



Small  
Spring Loaded



Heavy Duty  
Spring Loaded



Oil or Dry  
Multiple Disc



Heavy Duty  
Over Center

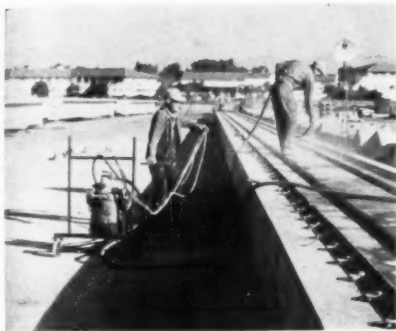



Power  
Take-Offs



Speed  
Reducers





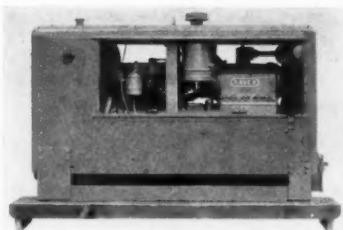
 Workmen apply form lubricant to double-tee molds with a standard spray paint pot. Available from the Shell Oil Co., the compound permits quick stripping of concrete beams and pipes, leaves concrete with a glossy surface and does not build up on the forms, according to the company. In addition it "sets" almost on contact, and cannot be squeezed out by the pressure of wet concrete or tamping. No clean-up of forms is necessary after stripping of members, the company claims. For further information about this form release agent, write to the Shell Oil Co., Dept. C&E, 50 W. 50th St., New York 20, N. Y., or use the Request Card at page 18. Circle No. 45.

### New 125-cfm compressor cross-mounts on trucks

A 125-cfm compressor for cross-mounting on motor trucks is announced by the Davey Compressor Co. of Kent, Ohio.

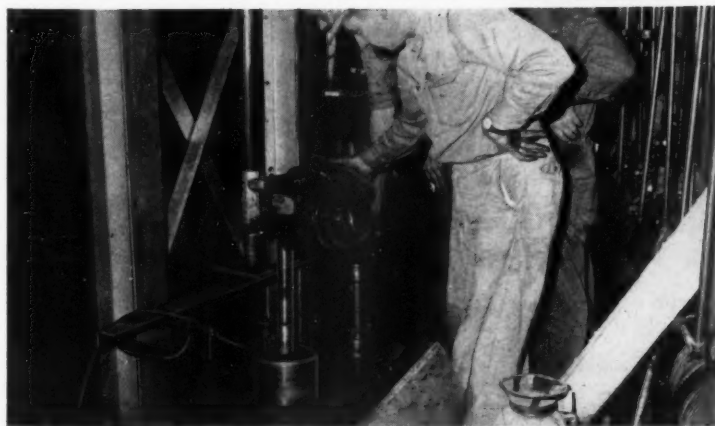
Known as Model 125-RP Hydrovane rotary skid, the new unit features a compact weatherproof control panel mounted on the curb end of the compressor. Located adjacent to clutch lever and air outlets, this permits easy one-man operation of the machine.

The Model 125-RP is 81 inches long, 34 inches wide, and 51 inches high; weight is 2,300 pounds. The unit is powered by a Hercules engine.



For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 80.

**This Thin Wall Bit  
CAN EASILY MEAN  
EXTRA PROFITS  
TO YOU**



Hoffman Bit cuts costs on reinforced concrete drilling job

### HOFFMAN Thin Wall CORE BITS

Fast, easy drilling through hardest materials such as reinforced concrete, fused quartz, etc. make Hoffman Thin Wall Bits ideal for foundation sampling, drilling mounting holes or for conduit openings. They drill holes to exact size the first time . . . eliminate digging, chip ping, forming . . . speed the work . . . save on extra materials and equipment. Surface Set or Impregnated . . . in standard O.D. sizes from 1" to 12" . . . Hoffman Thin Wall Core Bits assure true drilling accuracy and economy.

A Hoffman Bit cut right through the steel bars and heavy aggregate to produce this core from reinforced concrete.

Drilling Experts Since 1902

**HOFFMAN BROS. DRILLING CO.**  
Box 426 Punxsutawney, Penna.

Write for illustrated copy of Hoffman Bit Catalogue—FREE



For more facts, use Request Card at page 18 and circle No. 308

SEPTEMBER, 1958

### Patch roller kit fits any dump truck

A completely self-contained patch roller kit, which can be attached easily to any dump truck, is available from The American Coleman Co.

Called Tar-Baby, the unit attaches to the rear of the truck and uses the weight of the truck to compact the blacktop patching material.

Except for the addition of a single control valve, the Tar-Baby can use the present hydraulic system on any dump truck.

For further information write to The American Coleman Co., Dept. C&E, Littleton, Colo., or use the Request Card at page 18. Circle No. 91.



**NOW...provide COMPLETE containment of water, wastes, brines and sludges with**



Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints . . . will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete,

gunite, steel or other materials provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, 1/2", 3/4" and 5/8", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".



W. R. Meadows, Inc.  
13 Kimball Street, Elgin, Illinois

Gentlemen:

☐ Send my copy of the "HYDROMAT MANUAL".  
☐ Have representative call.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

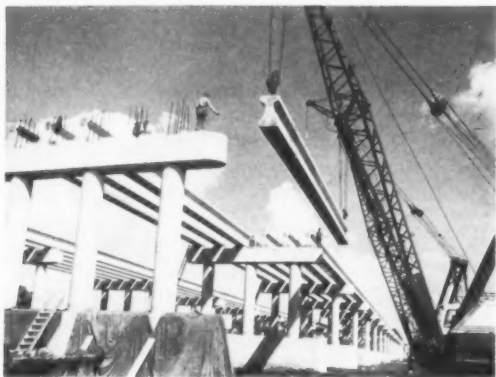
CITY \_\_\_\_\_ STATE \_\_\_\_\_

**SEAIGHT** PRODUCTS FOR BETTER CONSTRUCTION  
**W. R. MEADOWS, INC.**

13 KIMBALL STREET  
ELGIN, ILLINOIS

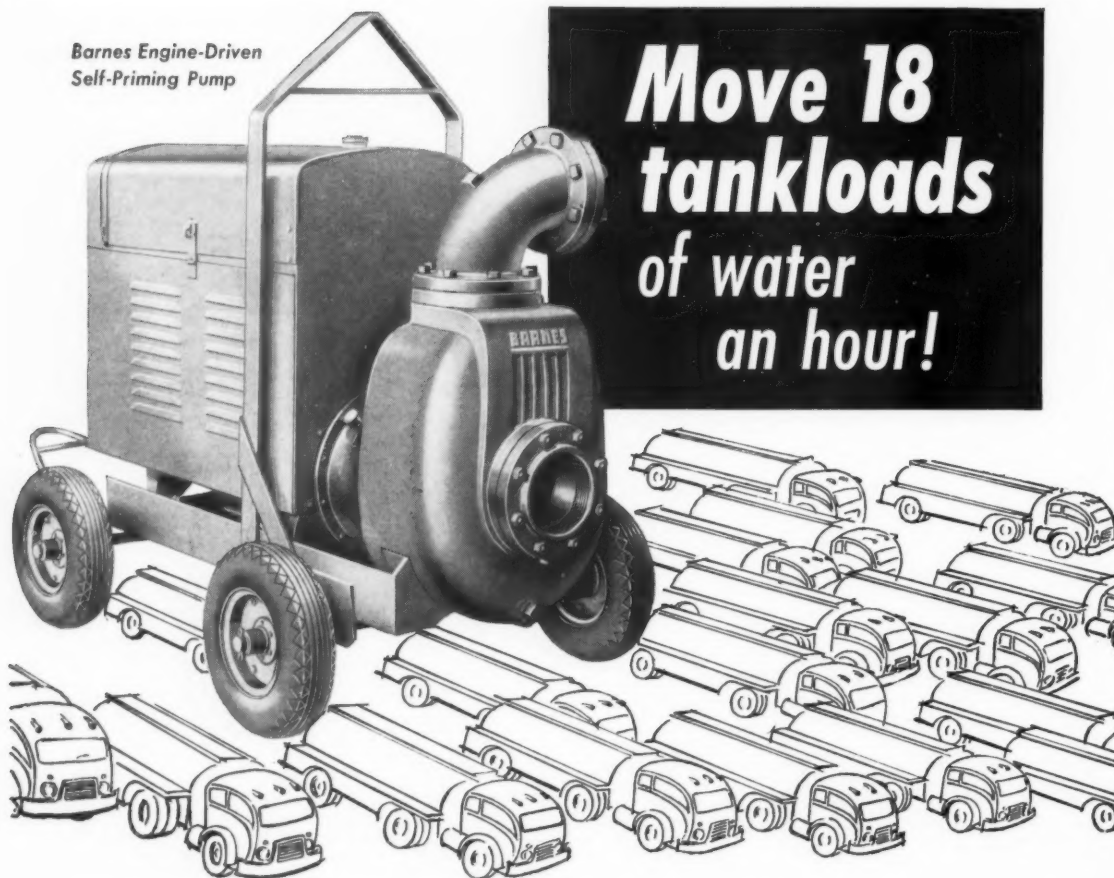
For more facts, use coupon, or Request Card at page 18 and circle No. 309

115



A total of 456 prestressed-concrete girders will be used to build the 4,940-foot Bridge No. T-4, the longest structure on the Illinois Toll Highway. Span length of each girder is 88 feet 10 3/4 inches, and each girder's weight is approximately 45 tons. Manufactured by the American-Marietta Co. at its Hodgkins, Ill., plant, the girders are delivered ready for installation. Illinois toll road engineers reportedly found that they could save an average of \$20,000 on each of 200 bridges by using precast-concrete deck spans. For further information write to the American-Marietta Co., Dept. C&E, 101 E. Ontario St., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 86.

Barnes Engine-Driven  
Self-Priming Pump



**Move 18  
tankloads  
of water  
an hour!**

## It's faster with BARNES Self-Priming Pumps!

With capacities up to 90,000 g.p.h. readily available, you will have no trouble choosing the *right* pump from the Barnes Blue Ribbon Quality line!

You'll move more water *faster* on excavating, mining and general construction jobs. You'll get the advantage of Barnes *exclusive* self-priming principle for centrifugal pumps. It primes and *re-prim*es without *fail*—even with as little as 1/3 water level in the pumps . . . during intermittent service.

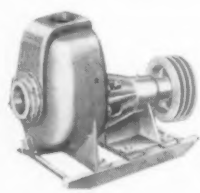
Barnes Portable diaphragm pumps handle semi-

solid seepage swiftly, too. Get a *free* copy of our new Construction Pump Selector #238 for ready reference. Ask your Barnes distributor or write to us. Address Dept. B-58.

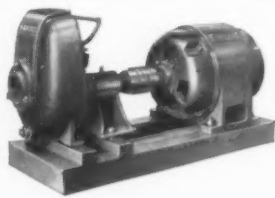
**BARNES**

BARNES MANUFACTURING CO.,  
MANSFIELD, OHIO

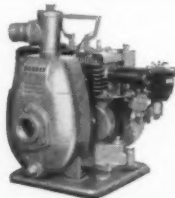
OTHER BLUE RIBBON PUMPS FOR ANY POWER SOURCE:



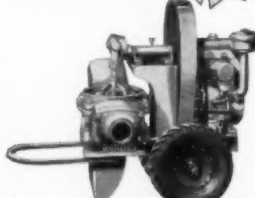
Barnes Universal Drive  
Self-Priming Centrifugal  
Pumps—4000 to 90,000 gph



Barnes Electric Driven  
Self-Priming Centrifugal  
Pumps—4000 to 90,000 gph



Barnes Engine-Driven  
'Lightweight' Pump  
Line—1500 to 18,000 gph



Barnes Mud 'n' Sludge  
Diaphragm Pumps—  
2500 to 6000 gph

For more facts, use Request Card at page 18 and circle No. 310

## Offer lock-nut wrenches for rear-axle bearings



A new set of rear-axle-bearing lock-nut wrenches for servicing all Ford trucks is offered by the Owatonna Tool Co.

Six sizes on four wrenches make up the complete set to easily remove and replace the octagon or hexagon rear-axle-bearing lock nut on any Ford truck rear axle, the company states.

For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 23.

## GOT THIS? (Predraining Problem)



## GET THIS! (Skilled Wellpoint Engineering)



From

**GRIFFIN**

**WELLPOINT CORP.**

881 East 141st Street, New York 54, N. Y.  
Hammond, Ind. Houston, Tex. Jacksonville, Fla.  
West Palm Beach, Fla.

For more facts, circle No. 311

CONTRACTORS AND ENGINEERS





The Simba's maximum operating height can be extended to over 100 feet. Automatic safety cams instantly lock the platform to the mast in the event of hoisting-cable failure.

### Construction hoist lifts 1,000 pounds at 125 fpm

A construction hoist designated Simba, and featuring a load capacity of 1,000 pounds and a lifting speed of 125 fpm, is offered by the Tubular Structures Corp. of America.

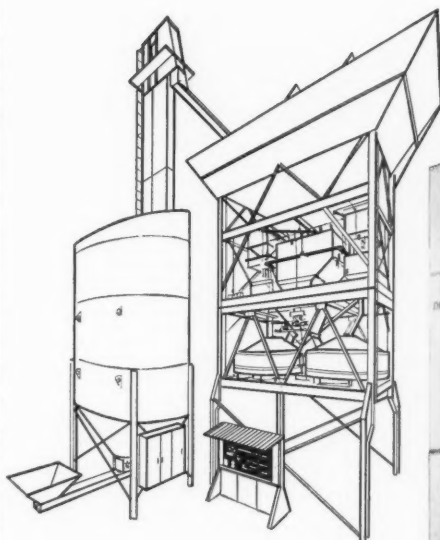
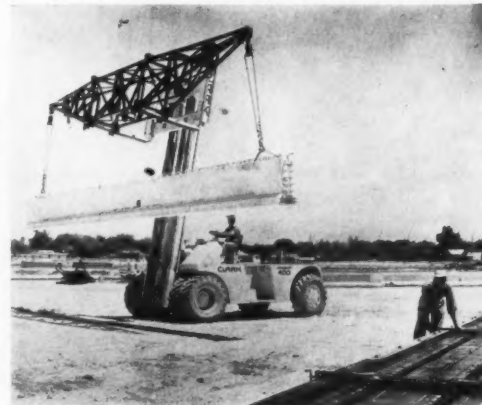
A basic height of 22 feet permits unloading to 18 feet. Additional 5½ and 11-foot sections can be quickly added to extend the maximum operating height to over 100 feet. A concrete bucket is available and may be attached to the platform.

The Simba hoist is towed by car or truck to the job, and one man can set it up in just a few minutes. A Briggs & Stratton 8-hp air-cooled engine provides the power.

For further information write to the Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card at page 18. Circle No. 10.



Damage to prestressed-concrete double-tee and channel slabs, caused when the members were stripped from permanent pouring forms, has been eliminated by use of a specially rigged fork truck at Dura-Stress, Inc., Leesburg, Fla. The company fixed its Clark Model CY-400, a 40,000-pound-capacity machine, with a removable boom attachment capable of carrying structural shapes 80 feet long. The boom itself is 36 feet long. Sleeves on the bottom receive the truck's forks. Adjustable slings hanging from each end of the boom lift the members through hook-eyes embedded in the concrete. Dura-Stress uses up to 100 cubic yards of concrete daily on the 11 beds, which range in length from 60 to 650 feet. For further information on this and other fork-lift trucks, write to the **Clark Equipment Co.**, Industrial Truck Division, Dept. C&E, Battle Creek, Mich., or use the Request Card at page 18. Circle No. 53.

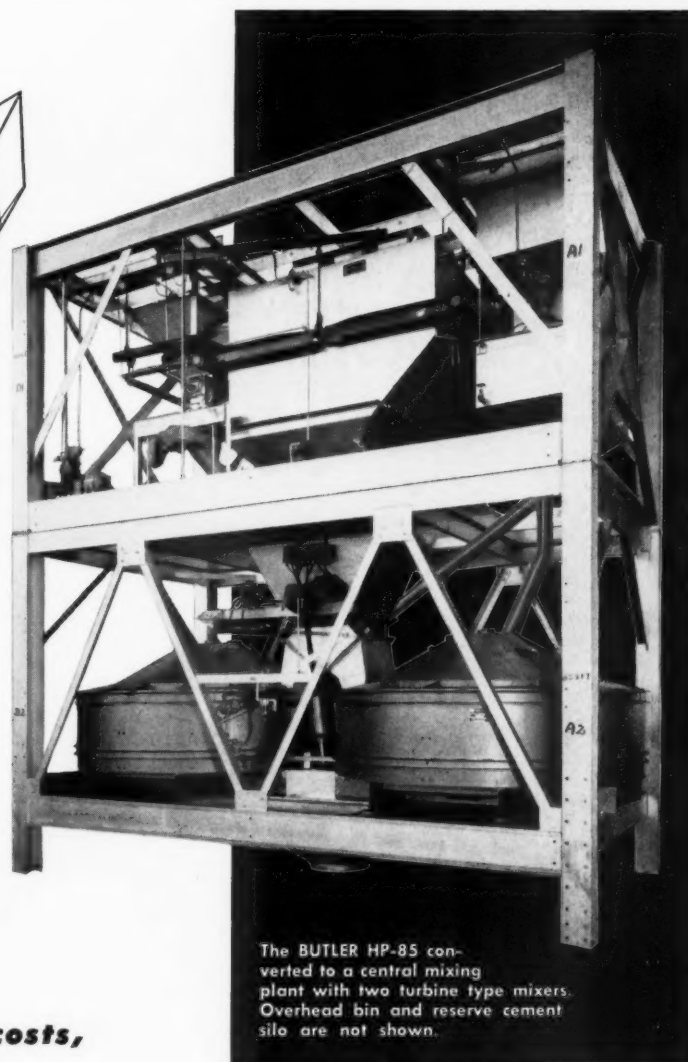


## Pre-cast Operators...

**DO YOU BUY  
YOUR CONCRETE?  
...PRODUCE IT?**

*For plus-quality, lower costs,  
be sure it's batched by a*

# BUTLER PLANT



The BUTLER HP-85 converted to a central mixing plant with two turbine type mixers. Overhead bin and reserve cement silo are not shown.

The new BUTLER HP-85 — as a highly portable ready mixed plant, or converted (as in the illustration) to a central mixing plant — is ideal for pre-cast operation.

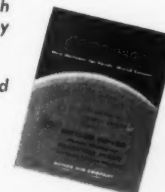
If your problem involves moving a batching plant to set-up for pre-casting at the job site, the HP-85 saves days of dismantling and erecting time. Literally, in a day and a half you are in operation, because all components, aggregate bin, reserve cement silo, batcher section (with all controls, piping and wiring in-place) ship as units on low-bed trailers or flat car.

As a transit-mix plant the HP-85, with astute aggregate handling, produces 200 yards an hour.

And if used as a central mixing plant with one or two turbine type mixers, your production is 90 or 180 yards an hour of high quality concrete.

So for king size production, the highest portability and top flight quality, be sure your concrete is BUTLER PLANT produced.

Send for this new Bulletin describing the BUTLER HP-85. Profusely illustrated with highly detailed descriptions. Shows why the HP-85 is the most portable, yet provides permanent plant production levels. Just write "HP-85" on a postcard and mail it today.



## BUTLER BIN COMPANY

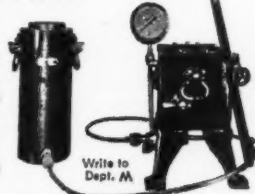
971 Blackstone Avenue • Waukesha, Wisconsin

## DUDGEON HYDRAULIC JACKS

### SALES RENTALS

CAPACITY  
TO  
600 TONS

FOR:  
PILE  
TESTING  
UNDER-  
PINNING  
BRIDGES  
PIPE  
PUSHING



Write to  
Dept. M

**DESIGNERS and  
MANUFACTURERS OF  
Hydraulic Units  
For Special  
Applications**

**RICHARD  
DUDGEON INC.** EST. 1850

789 BERGEN STREET BROOKLYN, N. Y.  
• ST 9-4040 •

For more facts, circle No. 313

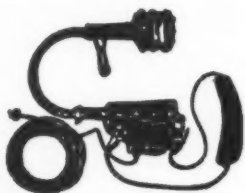
For more facts, use Request Card at page 18 and circle No. 314



Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

## "BERG" CONCRETE SURFACERS

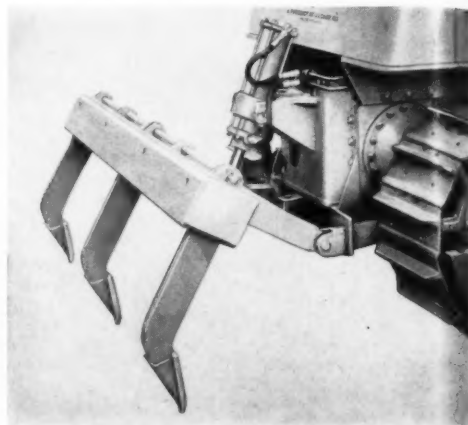
for: bridges, highways,  
airport runways, dams,  
culvert, floors, walls.



**CONCRETE SURFACING MACHINERY CO.**  
4665 Spring Grove Avenue Cincinnati 32, Ohio  
For more facts, use Request Card at page 18 and circle No. 315

## Product Parade

This heavy-duty ripper for use with Case Terra-Trac 80 and 100-hp crawler tractors penetrates 20 inches of hard ground. A trunion-mounted hydraulic cylinder provides down-pressure, as well as high clearance when the ripper is not in use.



### Offer heavy-duty ripper with removable teeth

A heavy-duty ripper for use with its TerraTrac Models 800 and 1000 crawler tractors is announced by the J. I. Case Co.

The new ripper digs to a depth of 20 inches. Removable hardened steel teeth are 1½ inches thick and have replaceable drive-on tips. Three teeth are standard, but extra slots are provided so that five can be used for lighter digging.

The ripper is raised and lowered by a large trunion-mounted hydraulic cylinder controlled from the operator's seat.

For further information write to the J. I. Case Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 34.

### Masonry drilling machine has water feed to bit

A mobile, high-speed, heavy-duty drilling machine said to drill clean, perfect holes 10 to 15 times faster through reinforced concrete and many other hard, brittle, nonmetallic materials, is announced by Diamond

# HIGHWAY SKID-MOUNTED EARTH-BORING MACHINES ... dig the hole ... set the pole ...



Available on full Swing-Base for curb-side digging or Spotter-Base for easy positioning. Write to Highway for complete information.



Spotter-Base for hydraulic positioning in an 80° arc, in-and-out motion of 22°.

## 10 plus features

1. Designed and built rugged and sturdy for tough daily use.
2. Powerfully made to dig holes up to 36" in diameter and 10 feet deep in any soil conditions.
3. Can be quickly mounted on any type or make of truck having sufficient capacity to carry its weight.
4. Can be equipped with integral winch and derrick with a rated capacity of 4500 pounds.
5. Can be quickly adjusted to dig at many angles regardless of position of truck.
6. Auger bar and pole derrick are raised from traveling to working position by power.
7. A complete earth-boring machine, integrally assembled with engine, clutch and transmission.
8. A new adjustable clutch with side ports in the clutch case affording easy access for adjustment.
9. New winch takes power directly from transmission. Utilizes all speeds of transmission.
10. Optional hydraulic controls for easier, faster operation.



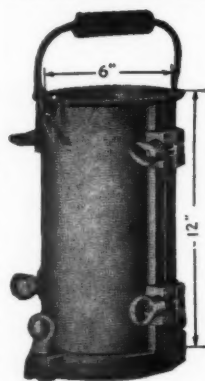
UTILITY  
DIVISION

**HIGHWAY TRAILER COMPANY**  
HEADQUARTERS: EDGERTON, WISCONSIN

Manufacturers of: Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches  
• Power Take-offs • Service Accessories • Commercial Trailers • Trailered Tanks and Dry Bulk Haulers  
SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Request Card at page 18 and circle No. 315

## CONTRACTORS SAY—



MODEL A

We get  
maximum  
strength  
specimens  
for testing  
concrete  
with the

**MOLINE**

## CONCRETE TEST MOLD

You can produce accurate test specimens to exact measurements with Moline Molds. They meet all ASTM requirements and are virtually indestructible—because they are made of refined malleable iron. Portable for laboratory or field work. Various sizes available including standard 6" x 12" Model A (illustrated). REMEMBER—A TEST IS ONLY AS GOOD AS THE SPECIMEN.

**MOLINE IRON WORKS**

Moline, Illinois, U.S.A.

75 Years of Service

For more facts, circle No. 317

CONTRACTORS AND ENGINEERS



To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.



Core & Saw, Division of Portomag, Inc.

The new Di-Cor drilling machine is equipped with a 2½-hp electric drill motor and an integral water swivel which supplies water to the cutting face of a diamond drill to cool the bit and flush away cuttings. This water fitting may be connected to any supply line and, if running water is not readily available at the job location, the unit may be hooked up to a portable pressure water tank.

The machine is wheel-mounted, simple to operate, and can be swung through 360 degrees to drill in any position and at any angle.

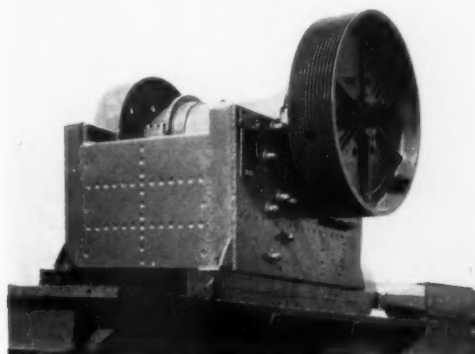
For further information write to Diamond Core & Saw, Division of Portomag, Inc., Dept. C&E, 1521 E. Nine Mile, Detroit 20, Mich., or circle No. 117 on the Request Card at page 18.

For more facts, circle No. 318→

### Announce new jaw crusher in 20 x 36-inch class

A new jaw crusher in the 20×36-inch size is announced by Pioneer Engineering. The unit is the overhead eccentric type, on which the moving jaw is suspended from a shaft which also serves as the pitman. The manufacturer points out that this eliminates double toggles and extra shafts.

The crusher is hydraulically adjusted to produce materials down to 2½ or 3-inch minus, and has a rated capacity under average crushing of 190 to 200 tph of 6-inch-minus product. For 3-inch-minus product, its rated capacity is 95 to 100 tph under similar crushing conditions.



For further information write to Pioneer Engineering, Division of Poor & Co., Inc., Dept. C&E, 3200

Como Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 68.

# Whiteman

## POWER BUGGIES®

Concrete, bricks, blocks, pipe, mortar, lumber, forms, millwork . . . there's a Whiteman Power Buggy to haul every type of material faster, better, cheaper. 8 models with various inter-

changeable body types. All are sturdy, tireless workers, priced to quickly pay for themselves. Job-proved in rugged use for over 12 years. Call your Whiteman dealer or send coupon now.

### a model for every job!



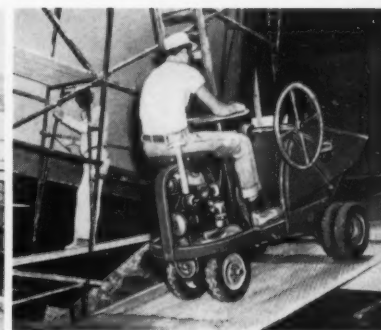
#### FORK LIFT

Here shown lifting a form into place. Moves palletized block, brick, mortar, etc. with ease. Lifts to 7' 10". 1000 pound capacity. Bucket body is interchangeable.



#### FLAT BED

Hauls lumber, forms, pipe, millwork and countless other materials. 44" x 48" or 44" x 60" bed. Stakes or side boards optional. Bucket body is interchangeable.



#### DUMP BUCKET

Fastest, cheapest way to place concrete. Carries 13 cubic feet. Speeds up to 16 mph. Climbs 20° grades. Controlled, accurate pour. Standard of the industry.



#### WALK-OR-RIDE

Efficient way to place concrete and haul bulk materials. Operator walks or rides. Travels narrow runways, thru 31" doors. Flat bed interchangeable.



#### PALLET LIFT

For fast, efficient hauling of palletized mortar, block, brick, bags, etc., where high lift is not required. Saves handling and man hours.



#### UTILITY

Does a multitude of hauling jobs. Large 44" x 60" flat bed. 54" wheelbase. Drives from front end. Also available in 38" wheelbase for towing. (shown)

### FOUNDATION CONSTRUCTION

### CAISSONS

DRILLED AND UNDERREAMED

### PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

**McKINNEY DRILLING COMPANY**  
NACOGDOCHES, TEXAS

Ph.: Logan 4-8373 • P. O. Box 190

For more facts, circle No. 319

SEPTEMBER, 1958

# Whiteman

THE LEADER IN CONCRETE EQUIPMENT



TRUCK MIXER

POWER BUGGIES

VIBRATORS

SCREEDING MACHINES

FLOATING-FINISHING MACHINES

WHITEMAN MANUFACTURING CO. Dept. CE  
13020 Pierce St., Pacoima, California

Please send prices, catalogs and name of distributor for:

- ☐ Power Buggies ☐ Vibrators  
☐ Screeding Machines ☐ Truck Mixers  
☐ Floating-Finishing Machines

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_



For high production with tractor-drawn scrapers, the Shepherd Machinery Co. has produced this 45-yard-capacity earthmover by special modification of a Caterpillar No. 491 scraper. The modifications include extending the bowl 36 inches and the height of sides 4 inches with reinforcing throughout, giving a capacity of 35.7 yards struck and 45 yards heaped. For further information write to the **Shepherd Machinery Co.**, Dept. C&E, P. O. Box 6789, East Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 120.

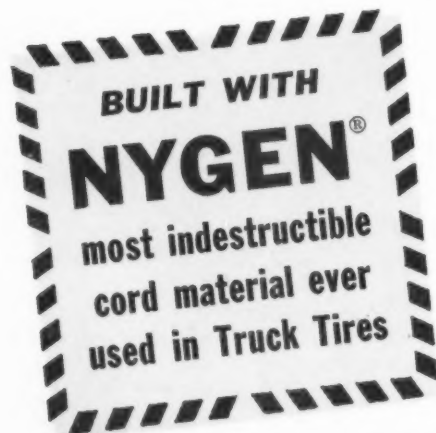
## Tops for Deep-Down Drive and Traction!



**the all-new wide-base**

# GENERAL

**L** LOGGING  
**C** CONSTRUCTION  
**M** MINING



In the toughest going, the Nygen-built General L. C. M. digs in and pulls you through faster for maximum profit. Built with a heavier, huskier tread, the L. C. M. delivers tremendous flotation plus crawler-like traction to speed up every job. And General's Nygen cord lets the L. C. M. take brutal punishment in stride, cuts down-time losses. Start now to get top profits with the tire that's tops for deep-down drive and traction... the all-new General L. C. M.

*Specify Generals on your new equipment*

**THE  
GENERAL  
TRUCK TIRE**

**THE GENERAL TIRE & RUBBER CO. • Akron, Ohio**

For more facts, use Request Card at page 18 and circle No. 320

## Corrugated diamond saw increases cutting rate

A new diamond saw for concrete, cinder block, brick, and other ma-



sonry products, said to combine the hardness of a diamond blade and the cutting power of a tooth-edge saw, is offered by the Rock-Saw Corp.

The design adds 144 hitting points to the conventional 12-inch blade. It also increases the number of channels for sludge release and coolant circulation, according to the manufacturer.

For further information write to the Rock-Saw Corp., Dept. C&E, 135 Metropolitan Ave., Brooklyn 11, N. Y., or use the Request Card at page 18. Circle No. 118.



**MAYO KOEPE HOISTS**

... offer lower initial costs, greater day-to-day economy for tunnels and small mines.

**FREE** Bulletin 20-A illustrates and describes installation of Mayo Koeppe Hoists, Head Frames, Sinking Frames and other shaft equipment. Send for your copy today.



**MAYO**  
TUNNEL AND MINE  
EQUIPMENT  
LANCASTER, PENNA.

For more facts, circle No. 321  
**CONTRACTORS AND ENGINEERS**



On the Dorsey Model MTT, Neway suspension with springs as well as walking beams equalizes the load on all three axles.



### Offer low-bed trailer in capacities to 75 tons

The Model MTT three-axle low-bed trailer is available from Dorsey Trailers. Standard models range in capacities from 35 to 75 tons, with higher capacities available on special order.

The machinery hauler features Neway suspension with springs as well

as walking beams to equalize the load on all three axles. It is offered in level deck and 6 or 9-inch drop design.

For further information write to Dorsey Trailers, Dept. C&E, Elba, Ala., or use the Request Card at page 18. Circle No. 2.

### Tough new pick point for rippers, shovels

The RDX pick point for rippers and shovels, said to offer excellent



penetration and long life in such tough formations as hardpan and tight river-bottom gravel, is announced by the Electric Steel Foundry Co.

The unit's tapered wear pattern keeps the point exceptionally sharp due to its narrow ribbed design, the manufacturer claims.

For further information write to the Electric Steel Foundry Co., Dept. C&E, 2141 N. W. 25th Ave., Portland 10, Ore., or use the Request Card at page 18. Circle No. 82.

### Lift block available with insulator link

Miller Swivel Products, Inc., announces the availability of its high-lift block with insulator link assembled as one unit. The link may also be



furnished for installation on blocks already in use.

The insulator link is designed to provide protection for riggers against electrocution from accidental contact of crane booms with overhead energized wires. It is offered in capacities up to 35 tons.

For further information write to Miller Swivel Products, Inc., Dept. C&E, P. O. Box 938, Pomona, Calif., or use the Request Card at page 18. Circle No. 27.

For more facts, circle No. 322→

## Cedarapids announces a new line of

# MODEL H

## BITUMINOUS MIXING PLANTS



**LOW INITIAL COST** When 100% portability is unnecessary in your operations, a Cedarapids Model H Bituminous Mixing Plant is your best bet. These stack-up, batch-type plants are designed without running gear or self-erecting equipment to lower your initial investment and reduce maintenance.

**SAME ADVANTAGES OF MODEL G PLANTS** Except for portability, Model H Plants give you the same efficient features you'll find on Cedarapids Model G plants... high capacity (up to 200 tons per hour or more); all-automatic operation on the three larger models; maximum flexibility for meeting a wide range of specifications; rugged, low-maintenance design and construction.

**MEETS EXACTING SPECIFICATIONS** New Models H 60, H 50, and H 40 weigh, batch, mix, discharge and start a new cycle automatically, and the finished product of each cycle conforms to the most exacting specifications without variation. On Models H 20 and H 15, simple manual controls assure accurate weighing to meet strict specifications.

**DESIGNED FOR PERMANENT OR SEMI-PERMANENT OPERATIONS** Sectionalized units of Model H Plants can be quickly stacked up by crane for stationary installation. When necessary to move, the sectionalized units are easily transported by low-bed trailer.

### FIVE SIZES to meet your volume demands

MODEL H 60	up to 7500-lb. batches* CAPACITY: 200 plus TPH
MODEL H 50	up to 5000-lb. batches* CAPACITY: 150 to 180 TPH
MODEL H 40	up to 4000-lb. batches* CAPACITY: 120 to 150 TPH
MODEL H 20	up to 2000-lb. batches* CAPACITY: 60 to 80 TPH
MODEL H 15	up to 1500-lb. batches* CAPACITY: 45 to 60 TPH

\* depending upon weight of aggregate, drying conditions and job specifications.

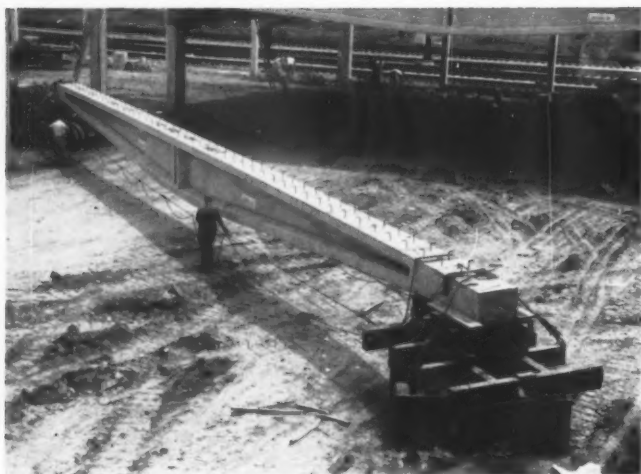
You can't beat any Cedarapids Bituminous Mixing Plant for economical, profitable operation! But now, in keeping with the Cedarapids policy of offering every producer the kind of plant he needs to get the good contracts with low bids, Cedarapids offers a new, complete line of lower cost asphalt plants. The new Model H series plants retain all the efficient production features of the popular G 60 and G 40 models, yet reduce your initial investment to cut over-all production costs to rock-bottom levels. If your bituminous mixing operations call for permanent or semi-permanent installation, be sure to investigate the profit advantages of new Model H Plants. Ask your Cedarapid Dealer for details today.

**IOWA MANUFACTURING COMPANY**

Cedar Rapids, Iowa, U.S.A.

Ad No. 458-N

Built by  
IOWA



**This 100-foot, 30-ton prestressed-concrete beam** is being moved into position at the erection site of Cleveland's new Transit System terminal. The beam, supplied by George Rackle & Sons, of Cleveland, is being hauled by a Rogers Bros. telescopic pole trailer with the pole feature removed. The rear section of the trailer houses a separate motor and hydraulic pump which facilitates the turning of the complete wheel assembly. According to the manufacturer, the rear section is easily synchronized with the front tractor movement, permitting maximum maneuverability. For further information about this trailer, write to **Rogers Bros. Corp.** Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 122.

### New 1 1/2-yard shovel is versatile machine

The Manitowoc Engineering Corp. announces a new 1 1/2-cubic-yard shovel. The Model 2300 is easily converted to a 1 1/2-yard clamshell or trench hoe, a 1 1/2 to 2 1/2-yard dragline, or a 35-ton crane.

An important feature on this machine is the easy hydraulic jack ad-

justment of the crawler drive, said to assure even crawler tension at all times.

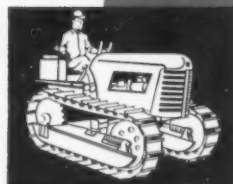
For further information write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 79.

The Model 2300 has only 11 gears in the upper deck machinery. A central lubricating point permits all major grease points to be reached at once.



### lower initial cost lower service cost

Compare and you will see the ROOSA MASTER fuel injection pump costs less. Use it and you will see that your service costs less. There are fewer parts to service and repair because of the unique design of ROOSA MASTER. It takes less space on your engine, and weighs less than 10 pounds. Even though small in size and light in weight one size serves either a 2, 3, 4, 6 or 8 cylinder engine.



The result of 17 years of engineering development is proven in hours and miles of outstanding performance.



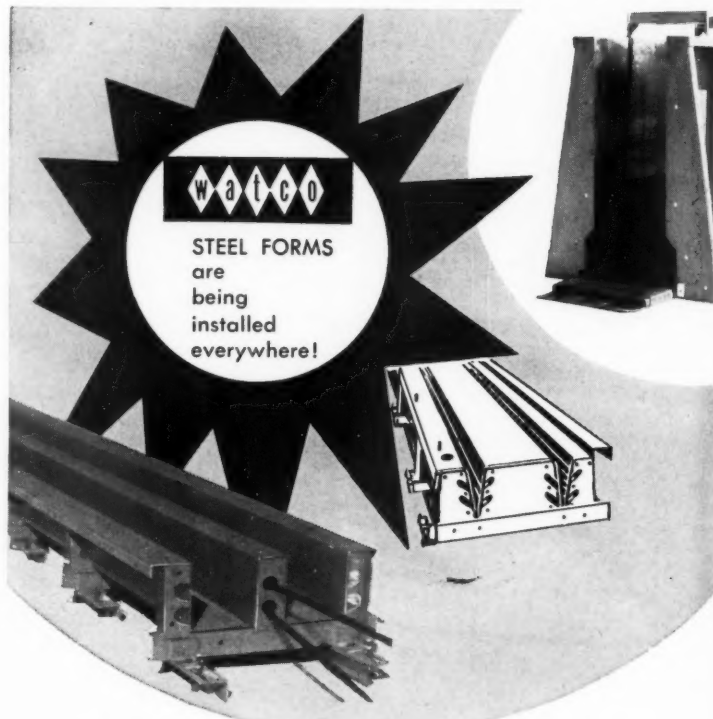
makes good diesels better

HARTFORD MACHINE SCREW CO., HARTFORD 2, CONN.  
DIVISION OF STANDARD SCREW COMPANY



YOU CAN DEPEND ON THE DIESEL THAT DEPENDS ON ROOSA MASTER

For more facts, use Request Card at page 18 and circle No. 324



■ This is the form that has the reputation among leading prestressing producers of setting the pace on any prestressed job. It has the extra features to speed set-up and stripping time, and the forms are offered in a range of sizes and shapes where most prestressing work is done. Basic forms are available in 10-ft. and 30-ft. lengths, and are fabricated to tolerances meeting all precast or prestressed concrete specifications. Pre-alignment prior to shipment assures exacting fit of each section in installation. These multi-use steel forms enable you to produce a greater variety of uniformly accurate concrete sections with a minimum of time out for alignment, repairs or replacement. A new 20 page catalog is just off the presses . . . write for your FREE copy today.

VISIT OUR BOOTHS 16-17 AT THE PCI CONVENTION

Manufacturers of WATCO Steel Forms

PLANT CITY STEEL CORP. • P.O. BOX 1308 • PLANT CITY, FLORIDA  
CONVERTO MANUFACTURING COMPANY • CAMBRIDGE CITY, INDIANA

For more facts, use Request Card at page 18 and circle No. 323

CONTRACTORS AND ENGINEERS





The Anthony Twin Yard Bird, a dump body for 1-ton truck chassis, eliminates the need for partial loads on larger trucks.

### Lightweight dump body has powerful twin hoist

The new Twin Yard Bird announced by the Anthony Co. is a lightweight dump body made especially for 1-ton truck chassis.

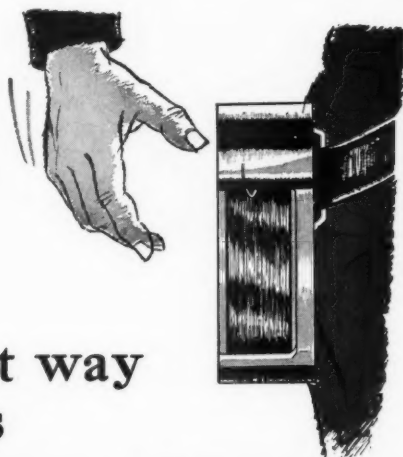
Constructed of 12-gage steel, the unit has an 8-ton lift capacity provided by a twin-head-lift high-pressure hoist. The hoist has a full sub-frame to take stresses and thus puts no strain on the truck frame. It is driven by power takeoff from the

truck transmission.

Twin Yard Bird bodies are available in lengths of 8, 9, and 10 feet. All bodies are 78 inches wide. Both 3-cubic-yard and 4-cubic-yard capacities are available in each length.

For further information write to the Anthony Co., Dept. C&E, Streator, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 28.

Reach  
Partner!



for the  
safest, easiest way  
to tie re-bars

## CAL-TIE WIRE



CF&I Cal-Tie Wire in the handy, belt-borne dispenser eliminates the hazards of clumsy, shoulder coils.

- Can't kink, tangle or catch on protruding objects
- Leaves both hands free
- Makes work in close quarters easier
- No loose ends to cause eye and face injuries

For safety and economy, try Cal-Tie Wire in the new CF&I handy reel dispenser. Coils weigh approximately four pounds. Wire available in sizes 14- through 20-gage. For full details contact the nearest sales office listed below.

5811

**CF&I CAL-TIE® WIRE**  
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Nebr.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita. **WICKWIRE** SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

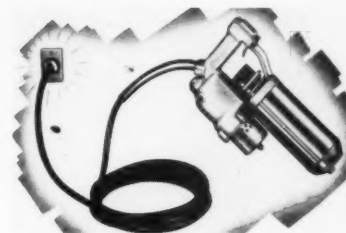
For more facts, use Request Card at page 18 and circle No. 325

### Electric hammers, drills are self-contained units

Syntron's new 1½ and 2-inch-capacity electric hammers and 2-inch-capacity electric hammer drills are now completely self-contained, the company announces.

The cable plugs directly into the power line. Conversion of ac to dc—formerly performed by the separate controller—is now accomplished by an improved rectifying element inside the tool itself.

Both hammers and drills produce 3,600 blows per minute for cutting, chipping, and drilling in concrete, stone, brick, and other hard compositions.



For further information write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 103.



## Another Winning Combination



**Ingersoll-Rand  
COMPRESSOR**

...and **CONTINENTAL RED SEAL POWER**

Year after year, Continental's famous dependability goes on building product acceptance for leading manufacturers of equipment. Here, for instance, an Ingersoll-Rand 85-cfm Rotary Compressor with Continental F-140 engine operates a PB8A Paving Breaker, using mail points, clay spades, and tamping bits, on a job in upstate New York. You cut costly down-time . . . do more work . . . with dependable Red Seal power.



6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.  
6219 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.



**CONTINENTAL IS ON THE MOVE IN 1958**

For more facts, use Request Card at page 18 and circle No. 326



All standard mountings are available for the Type WT, including crawler, self-propelled carrier, and truck.

### 30-ton truck crane has flexible design

A new 30-ton lorry crane is announced by the Insley Mfg. Corp.

Called the Type WT, the unit can be supplied with three different truck mountings to meet varying axle load requirements of the various states. The 30-ton truck carrier is 9 feet wide, and the 25-ton truck carrier is offered in both 8 and 9-foot widths.

The WT features an 8-foot-wide

deck, with all operating machinery mounted low and well back of the center line of rotation. The basic boom length is 35 feet.

For further information write to the Insley Mfg. Corp., Dept. C&E, P. O. Box 167, Indianapolis 6, Ind., or use the Request Card that is bound in at page 18 of this issue. Circle No. 107.



## 3-WAY SOIL BLENDER!

Here's the one multi-purpose tool every contractor needs to speed his work and make him more money! Solving soil problems is a specialty of Rome Disk Plowing Harrows. Have you ever encountered these problems?

**1 Dead, dry dirt on the fill** that blades like ashes and packs like sawdust? Wet it down with your water trucks, then mix it deep with a Rome Disk Plowing Harrow to put it in good shape for specified compaction.

**2 In-place materials to mix?** Soil cement materials, stratas or lifts in fills can be readily turned into a compact, homogeneous fill by mixing and pulverizing with a Rome.

**3 Too wet to work?** Blend wet soil with dry materials, plow deep with a Rome Disk Plowing Harrow to dry out your fills and cuts.

See your Rome Dealer for complete details — he is also your Caterpillar Dealer.

ROME PLOW COMPANY, Cedartown, Georgia

**Rome Disk Plowing Harrows**

REG. U. S. PAT. OFF.

For more facts, use Request Card at page 18 and circle No. 327

### Curb, trench backfiller has several improvements



A combination hopper-conveyor towed by the truck that charges it, the improved Power-Pack unit now permits discharge of material at a rate of 180 tph.

Improvements on its curb and trench backfiller are announced by the Power-Pack Conveyor Co. The machine is a combination hopper-conveyor towed by the truck that charges it.

A more powerful conveyor drive permits discharge of material at a rate of 180 tph.

Design improvements further simplify attaching the unit to trucks for operation or towing to other jobs, and

assure greater accuracy and stability while discharging material.

Attachments for the improved machine permit filling of trenches up to 8 feet from the pavement, as well as the laying of hot-mix, etc., for road-widening and shoulder work.

For further information write to the Power-Pack Conveyor Co., Dept. C&E, 836 E. 140th St., Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 21.

### cut concrete costs up to 6%... eliminate call-backs...



### Compact sub-base with Maginniss POWR-FACTORS!

Maginniss vibratory compaction assures uniform density of sub-base... eliminates voids... prevents loss of mortar... reduces concrete required up to 6%! And, compacted sub-base stops slab settling and cracking... eliminates expensive call-backs for repairs.

Find out how Maginniss Powr-Factors will cut concrete, labor and call-back costs on all your jobs. See your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

Maginniss Power Tool Company  
154 Distl Ave., Mansfield, Ohio  
Yes, I want to know more about the Powr-Factor for compacting sub-base.

name \_\_\_\_\_  
address \_\_\_\_\_  
city \_\_\_\_\_ zone \_\_\_\_\_ state \_\_\_\_\_



MODEL PP-18 POWR-FACTOR.  
Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.

AA-7622

For more facts, use coupon, or Request Card at page 18 and circle No. 328

CONTRACTORS AND ENGINEERS



A low center of gravity makes the 6-ton-capacity Totem-All an ideal machine for carrying all types of equipment. The unit is hitched to a light pickup truck.

### New equipment hauler is pulled by pickup

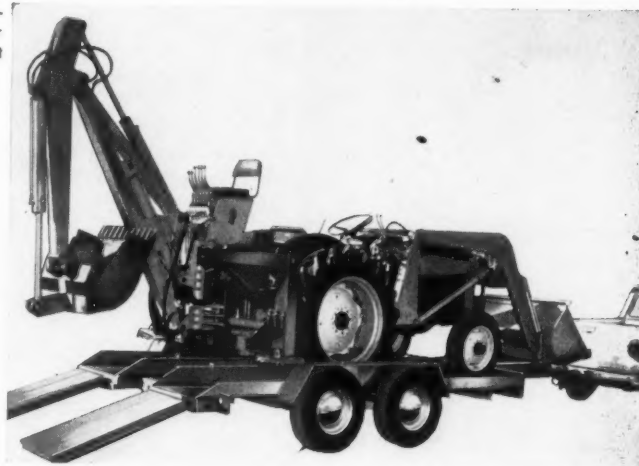
A newly announced trailer for hauling light and medium-size construction machinery is available from the Birmingham Mfg. Co., Inc.

Called Totem-All, the unit is hitched to a light pickup truck for transporting small crawlers, tractors with front-end loaders, backhoes, scraper blades, trenchers, and other similar equipment.

Specifications include an over-all

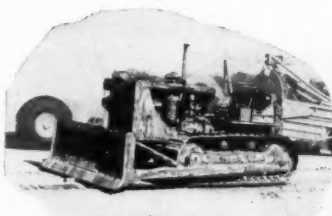
length of 19 feet, and a 12-foot 6-inch length of bed; over-all width of 96 inches, and a 78-inch loading width. The tandem unit has a 12,000-pound capacity, and the triple Totem-All has a capacity of 17,000 pounds.

For further information write to the Birmingham Mfg. Co., Inc., Dept. C&E, P. O. Box 1351, Birmingham, Ala., or use the Request Card at page 18. Circle No. 123.

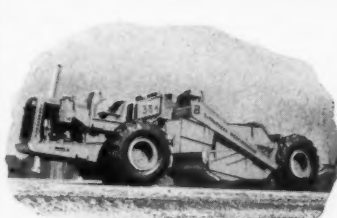
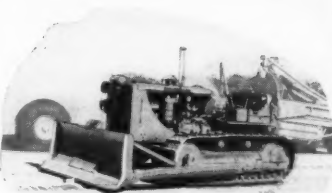


Workman vibrates 1½-inch slump concrete for tongue beams with the Stow Model DU electric vibrator. Because of its

small heads—1¼ or ¾-inch—the Model DU is especially recommended for jobs with narrow forms, such as prestress work. The unit is offered with flexible shafts in lengths from 2 to 21 feet long. A 9-pound ¾-hp motor delivers 12,000 vibrations per minute; thermal overload protection is an added feature. For further information write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 121.



Add \$1,000 IN VALUE WITH \$8.00 WORTH OF NU-MA-SHEEN!



### \$3 Million Equipment Auction in Ohio

Dayton, Ohio — Called "the biggest auction sale of heavy construction machinery in the United States this year", more than 2,000 contractors and their representatives from every state in the Union, Canada and Central and South America, reportedly spent \$1,800,200 for used construction equipment that was said to have an original cost of approximately \$3,000,000.

The sale was conducted on November 14, 15 and 16 by Ross & Ross, auctioneers, for Smalley & Sons Construction Co.

Sales Manager for a Cleveland dealer said, "Ross got better prices than we ourselves expected when he auctioned for us at Canton, Ohio sale earlier this year."

Motor scrapers (Caterpillar DW-21s) were "knocked down" for prices up to \$22,500 each for eight separate items. Crawler tractors (Caterpillar D-9's) that retail for \$38,600 each brought \$32,000 and \$30,000; a 1955 Gradall that costs \$19,700 new was sold by Ross for \$16,500.

### OVER 1700 GALLONS OF NU-MA-SHEEN WAS USED TO APPEARANCE-CONDITION THIS EQUIPMENT FOR SALE!

NU-MA-SHEEN is a new quick-drying heavy duty synthetic ROAD MACHINERY ENAMEL, formulated for maximum color retention, weather resistance and ease of application. It flows on evenly whether brushed or sprayed, dries dust-free in one hour, hard in four hours, covers solidly in one coat.

NU-MA-SHEEN is made especially for extreme weather exposure, resists oils, grease, gasolines, abrasions by dirt and mud.

BUY IT...TRY IT...YOU'LL BE BACK FOR MORE!

- ★ INCREASES TRADE-IN VALUE
- ★ BUILDS PRIDE IN GOOD EQUIPMENT
- ★ NU-MA-SHEEN EQUIPMENT BUILDS PRESTIGE, BRINGS BUSINESS



Caterpillar Yellow, A-C Orange, H. H. Red, Barber-Greene Green, Thew Yellow, Euclid Green, Gallion Orange, Bucyrus-Erie Maroon, Green, Cream, LeTourneau Yellow, Michigan Blue...and many other colors.

TELEPHONE: Winton 1-4000

**EARNEST MACHINE PRODUCTS CO.**  
12761 TRISKETT ROAD • CLEVELAND 15, OHIO

For more facts, use Request Card at page 18 and circle No. 330

if you operate diesel-powered equipment...

**Tachographs** help cut down "lugging" ...lengthen engine life...save fuel!

The RPM Tachograph is a recording tachometer which gives your operators a constant guide for proper engine operation, flashes a warning light when predetermined control speed is exceeded, and provides supervisors with an accurate charted record to check operator performance. In addition to engine speed in RPM, the Tachograph chart records time,

total engine revolutions, and OFF periods. A small investment in an RPM Tachograph for every diesel engine you operate can pay big dividends by reducing costly "lugging." Tachographs are easy to mount and position on the instrument panel, are ruggedly built and tamper-proof. Bulletin SU-107 tells the whole story—mail the coupon today.

**Wagner Electric Corporation**  
6364 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U.S.A.  
Please send me Bulletin SU-107.

Name and Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
We operate \_\_\_\_\_ Vehicles (NUMBER)



For more facts, use coupon, or Request Card at page 18 and circle No. 329



A 40-foot boom for crane service is standard on this Model 30-B. For a longer boom, inserts up to 30 feet long are available.

### Crawler-mounted crane is heavy-duty unit

A crawler-mounted Model 30-B heavy-duty crane, said to have greater lifting capacity than the standard Model 30-B crawler, is announced by the Bucyrus-Erie Co.

A 40-foot two-section boom is standard. Special boom-pin connection lugs are available as optional equipment for rapid change of boom lengths. Three boom-point sheaves are furnished. For a longer boom, 5, 10, 20, and 30-foot inserts are available.

Maximum load at 10-foot radius with a 40-foot boom is 35 tons.

Equipment for power-controlled lowering of load on the main hook is standard, as is pendant-type suspension with mast for all crane booms. Booms up to 100 feet long can be carried with boom point and mast lowered to cab height when special pendants are provided.

The main operating functions of the Model 30-B are air-controlled.

For further information write to the Bucyrus-Erie Co., Dept. C&E, The Doerman Bldg., 10th and Michigan Aves., South Milwaukee, Wis., or use the card at page 18. Circle No. 49.

### Crown transitions easy with transverse finisher

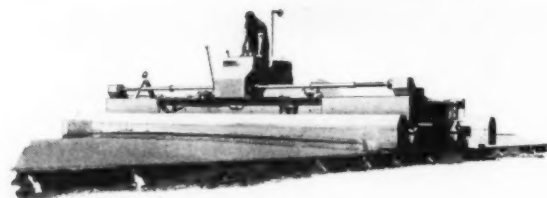
A new transverse finisher, offering a single lever adjustment for crown transitions, is announced by the Koehring Co.

The one-man-operated unit has two hydraulically raised oscillating screeds. Slabs from 10 to 30 feet wide can be finished with standard adjustable widths as follows: 10 to 18 feet; 18 to 26 feet; and 22 to 30 feet. Three screed oscillation speeds—23.6, 34.2, and 56.4 strokes per minute—are pro-

vided. Screed stroke length is variable.

Traction speeds available during the finishing operation are 8, 11.8, and 19.5 fpm. An additional speed of 81.5 fpm is available when nonfinishing movement is necessary.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 98.



The one-man-operated machine has two hydraulically raised oscillating screeds, and can finish slabs up to 30 feet wide. All controls are within easy reach of the operator.



## NEW 56 HP.

## WISCONSIN ENGINE

### ...powers belt and hydraulic system of Ulrich T-40 Trench Filler and Shoulder Spreader

● Machine Details: Used with Caterpillar No. 12 and No. 112 Motor Graders, new attachment places and spreads stone, gravel, dirt or asphaltic mixes in road widening trenches and on road shoulders... spreading material in widths up to 10 feet wide as fast as trucks can load its hopper. Builder is Ulrich Manufacturing Co., Roanoke, Illinois.

Engine Facts: Model VR4D... newest and largest Wisconsin Engine... powers 30-inch wide conveyor belt and hydraulic system controlling blade. Rated from 43 to 56 hp. between 1400 and 2200 rpm.

Get complete specifications. Write for bulletin S-207. Also ask for bulletin S-223 describing all models 3 to 56 hp. All models can be equipped with electric starting.



For more facts, use Request Card at page 18 and circle No. 331

## Big Ripper Tackles Tough Rock Jobs

Designed to use full power of  
IH TD14, TD18, TD20 or TD24



The tremendous power of the IH TD14, TD18 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

#### LIVE SWIVEL ACTION

Shanks swivel 15° in either direction... follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

#### RUGGED POWERFUL SHANKS

Scientific contour gives extra strength at strain points and pulls points down deep... rocks roll out and clear of head-frame. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.

#### POSITIVE CONTROL

Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

#### DRAWBAR TAKES PULL

The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

#### RIP AT ANY DEPTH

Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data on the Greenville-ATECO ripper.

See it at your International-Harvester Dealer's

## GREENVILLE

STEEL CAR COMPANY

ATECO DIVISION

Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 332

CONTRACTORS AND ENGINEERS





The hydraulically operated Sky Boy Model 876 reportedly will pick up and load rocks up to 1,000 pounds in weight.

### Heavy-duty rock picker unloads into dump trucks

The Bestland Sky Boy Model 876 rock picker is available from the Viel Mfg. Co.

This hydraulically operated unit features a 4,000-pound hopper-box capacity, and reportedly will unload easily into a dump truck. All operations are controlled from the tractor seat.

The spacing of the tines is adjustable, and the picker will handle both small and large rocks equally well. According to the manufacturer, it will pick up and load rocks up to 1,000 pounds in weight, depending on the shape.

For further information write to the Viel Mfg. Co., Dept. C&E, P. O. Box 632, Billings, Mont., or use the card at page 18. Circle No. 43.

### Concrete-testing machine has 175-ton capacity

The Model LT-700, a machine for the routine testing of concrete and concrete products, is available from Forney's Inc.

The machine's capacity of 350,000 pounds with both high and low-pres-



On the LT-700, an assortment of standard accessories is available for testing cubes, cylinders, blocks, bricks, beams, and lintels.

sure systems and variable loading speed makes possible a wide variety of uses in both compression and flexure. An assortment of standard accessories is available for testing cubes, cylinders, blocks, bricks, etc.

For further information write to Forney's Inc., Tester Division, Dept. C&E, Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 51.

**YES! YOU CAN BUY DIRECT  
SEND US YOUR ORDERS FOR  
NEW ROTARY SWEEPER  
BROOM CORES**

**WE MANUFACTURE ALL SIZES**

**SUGGESTION—To faraway users. Order cores only without fibres but ready to fill.**



- Detroit
- Harvester
- Fordson
- Grace (3 types)
- Hough
- Huber
- Lull
- Littleford
- Little Giant
- Mell-Blumberg (M-B)
- UP, Rosco
- Spearswell
- Tamco
- And many others

**Also Cores Made to Your Specifications**

**KENNEDY'S  
VAN BRUSH MFG. CO. INC.**  
SINCE 1928  
327 S. West Blvd., Kansas City, Mo.

For more facts, use Request Card at page 18 and circle No. 333

**Big C-O-N-T-I-N-U-O-U-S**

**Drag Broom Levelers with Spring Steel Wires or Bass Fibres six inches wide and lengths to 12 feet, and also now three inches wide. No frame required.**



Also furnished filled with Palmyra-Hickory or Bass Fibres or even Spring Steel Wires.

**WE SHIP WORLDWIDE—IMMEDIATELY**

In stock — **ONLY \$350 FOOT**

Length 4', 6', 8', or 12'. Wt. approx. 5 1/2 lb. (foot)



**THE LITTLE PECKERWOOD**

3" wide, 15" long, with two bolts, fits your present frame.

**ONLY \$250 EACH**

## Geared by FULLER...

## ...Insley Crane Carrier speeds construction at Walt Disney Studio

Donald Duck may be up in the air about goings-on at the new sound stage at Walt Disney Studios in Burbank, California. But the rest of the Disney family is enthusiastic about progress on the ultra-modern, super-equipped stage.

One reason for their enthusiasm is the speedy construction of the building, which is scheduled for work on Disney's newest production, a pixilated Irish fantasy named "Darby O'Gill and the Little People."

Rapid progress on the new sound

stage is largely due to the speed and flexibility of Insley cranes used on the construction project, all of which feature Fuller main and auxiliary Transmissions. Built by Insley Manufacturing Corporation, Indianapolis, all Insley cranes, like the 35-ton model shown here, are mounted on Maxi crane carriers.

Because of the nature and variety of work these machines are expected to perform, Maxi specifies only dependable, heavy-duty transmissions for each model. Standard equipment

on 35, 40 and 45 ton models includes Fuller 4-A-86 main Transmissions and Fuller 3-C-92 auxiliary Transmissions. Designed to help the operator handle heavy loads over widely varying conditions, the Fuller 4-A-86 and 3-C-92 Transmissions have proved ideal for all types of crane work.



FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich.  
Subsidiary, Eaton Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.



©WALT DISNEY PRODUCTIONS

For more facts, use Request Card at page 18 and circle No. 334

The trailer rises to approximately 30 degrees before the front wheels of the tandem suspension leave the ground.

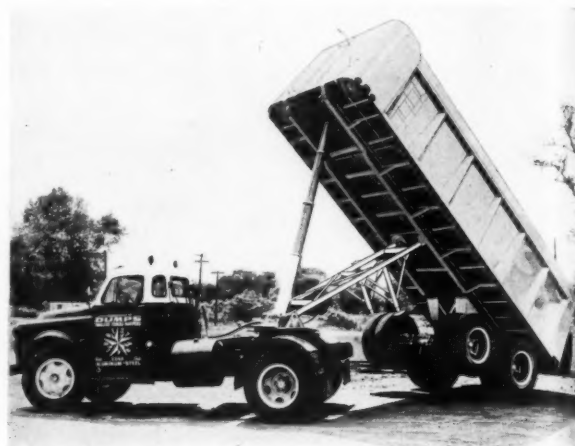
### Aluminum dump trailers feature frameless design

A full-frameless aluminum dump trailer has been added to the line of the Lodestar Corp. The trailer is available in models of 20 to 28-foot lengths with capacities of 16 to 31 cubic yards.

Weights of these trailers are ap-

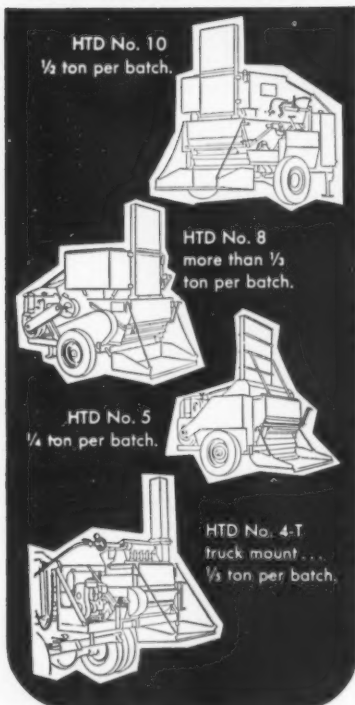
proximately 4,000 pounds less than those of conventional steel trailers, according to the manufacturer.

For further information write to the Lodestar Corp., Dept. C&E, South Main, Niles, Ohio, or use the Request Card at page 18. Circle No. 78.



**FOR LOW-COST  
HOT OR COLD  
PAVING OR PATCHING  
IN ANY SEASON**

### McConnaughay ASPHALT MIXERS



For details and specifications  
write...

**McCONNAUGHAY  
MIXERS, INC.**  
LAFAYETTE, INDIANA

National distributors: Asphalt Equipment Co.  
3314 Cherry Lane, Fort Wayne, Indiana

For more facts, circle No. 335

### Earthwork calculations sped with electronic computer

Remington Rand announces that earthwork computation can now be done at electronic speeds with its Univac 120 computer.

According to the company, a few of the operations now possible are:

1. the conversion of cross-section plus and minus elevations to actual ground elevations at the rate of approximately 40 stations per minute;
2. the calculation of tangent elevation, vertical curve correction,

grade elevation, and center line cut/fill, together with station and elevation equations, at the rate of approximately 9,000 stations per hour;

3. the computation of grade change at about 90 stations per minute.

For further information write to Remington Rand Univac, Division of Sperry Rand Corp., Dept. C&E, 315 Fourth Ave., New York 10, N. Y., or use the Request Card at page 18. Circle No. 7.



**On BIG jobs or  
SMALL jobs:**

**Save wire... save time... increase  
production with IDEAL Tie Wire Reels!**

For re-bars, metal lath, pipe insulation—wherever wire is applied and tied—Ideal Tie Wire Reels permit 6 to 8 more ties per man per minute... save 25 to 30% in wire... compared to dangerous coil-over-shoulder method! Ideal Tie Wire Reels refill in seconds... handle 14

through 20 gauge wire... end wire waste and speed production on every job! Ask your equipment distributor for the full story and a free demonstration.

... OR WRITE US!

Send me full details on Ideal reels and the tie wire checked below:

- |                                   |                                     |                                    |
|-----------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Black    | <input type="checkbox"/> Soft       | <input type="checkbox"/> Stainless |
| <input type="checkbox"/> Annealed | <input type="checkbox"/> Galvanized | <input type="checkbox"/> Steel     |
| <input type="checkbox"/> Copper   | <input type="checkbox"/> Aluminized |                                    |
| <input type="checkbox"/> Clad     |                                     |                                    |

Name .....  
Company .....  
City ..... Zone ..... State .....



**IDEAL REEL COMPANY, PADUCAH, KENTUCKY**

For more facts, use coupon, or Request Card at page 18 and circle No. 336



For better performance and longer service, get protective maintenance done ON TIME! Hobbs Hour Meters indicate to the HOUR and MINUTE when maintenance and service functions are due—at a glance.



### FOR DIRECT CURRENT

Indicates operating time on all types of equipment powered by internal combustion engines—gasoline or diesel. Tells when lubrication, oil and filter changes, overhaul, etc. are due. Not a revolution counter, but a true electric timing instrument. Ruggedly built... easy to install... reads at a glance.



### FOR ALTERNATING CURRENT

Indicates operating time of any equipment powered by alternating current—motor generating sets, conveyor systems, etc. Small, compact, easy to install. Designed and built for years of service.

• Distributors in Principal Cities  
WRITE FOR CATALOG 600

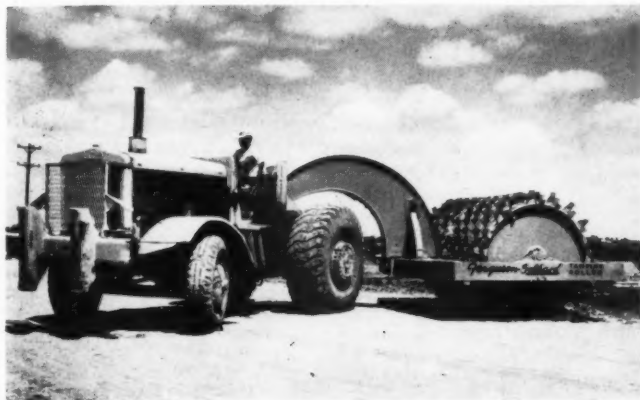


2067 YALE BLVD.  
SPRINGFIELD, ILLINOIS

For more facts, circle No. 337

**CONTRACTORS AND ENGINEERS**



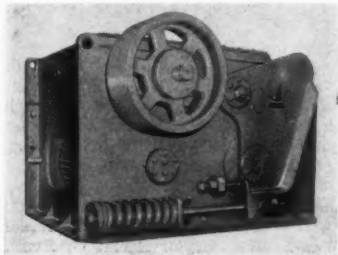


### New roll crusher offered in two sizes

The Eagle Crusher Co. announces two new roll crushers in sizes 24x20 and 30x24.

Made of manganese steel, the rolls are furnished either both smooth or both corrugated, or one of each.

Through heavy-duty tension springs, one roll is fixed and the other



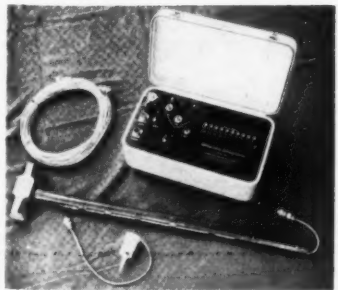
floats, supplying ample crushing pressure yet relieving undue strain resulting from tramp iron and other foreign materials. Adjustment of the opening between the rolls (up to 3 inches) is accomplished by adjusting screws on either side.

For further information write to the Eagle Crusher Co., Dept. C&E, 124 N. Washington St., Gallon, Ohio, or use the Request Card at page 18. Circle No. 108.

### Device finds rock depth with no drilling required

A new instrument for locating rock without drilling is announced by the Geophysical Specialties Co.

Using sound waves in the earth, produced by an impact on the ground



surface, the Model MD-1 refraction seismograph reportedly permits determination of depth to bedrock with an accuracy of 5 to 10 per cent, or alternatively permits determining whether or not rock exists within any specified depth to 50 feet or more.

For further information write to the Geophysical Specialties Co., Dept. C&E, 4206 Longfellow Ave., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 115.

Fitted with a special gooseneck tongue which allows each drum to oscillate independently, and allows the roller to be attached to any of the larger 2 or 4-wheel rubber-tire tractors, the Ferguson-Gebhard tamper offers pressures up to 1,000 psi and 4,000 pounds per foot of drum length. With 2-wheel tractors, the roller will easily turn on a 20-foot width of fill. To provide complete oscillation of both drums, the gooseneck tongue revolves freely around the center pin of the roller and is held upright by two heavy cantilever springs. Side movement of the tongue is limited by heavy bumpers on each half of the roller. For further information write to the Shovel Supply Co., Dept. C&E, P. O. Box 1369, Dallas 21, Texas, or use the Request Card at page 18. Circle No. 102.



A-W Hydraulic Crane shown bending pipe-type cable at Wright-Patterson Air Force Base, Dayton, Ohio. Two hydraulic outriggers on the sides of the crane hold the pipe while the boom pulls it up into the desired curve.

## A-W Hydraulic Crane proved excellent on high-precision electrical project

says Helldoerfer-Castellini, Dayton, Ohio

One of the pioneers in laying underground pipe-type cable, Helldoerfer-Castellini recently completed its largest installation of this kind at Wright-Patterson Air Force Base. The project, which involved laying 10,000 ft. of new cable, cost \$2.5 million. Putting the 69,000 v line underground removed the serious hazard of overhead line interference, greatly increasing safety in landings and takeoffs.

The company informs us: "For the single crane we needed to handle this

pipe, we made a thorough study of the field, and chose an A-W for several reasons: it is more adaptable and maneuverable than other cranes; it is safe around substations; it has no long cables, the possible snapping of which would be very dangerous; its dependability assures low downtime.

"The 6-in. cast iron pipe sections were 40 to 45 ft. long and carried conductor cable drawn into them before being lowered into the trench. Unusual care was required in handling, bending

and installing these pipe sections because of a special insulation to protect them from corrosion.

"The A-W crane proved its capacity for handling pipe, fittings and material for the towers with precision and safety—both to personnel and the things it carried. The only alternative was rental of an \$18-an-hour crane. We saved well over \$100 a day by deciding to buy an A-W instead."

For complete details on this installation, write for Certified Gould Report No. 5704.

## Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 338



# Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

**A fact sheet describing the benefits of the Elgood dual four-point tensioning and takeup system for prestressed concrete.** On-the-job photos illustrate the single-man, remote-control operation. Write to the Elgood Equipment Corp., Dept. C&E, 380 Ten Eyck St., Brooklyn 6, N. Y., or use the Request Card at page 18. Circle No. 133.

**Earth auger—a bulletin describing the Acker all-purpose unit for soil sampling, core drilling, and earth**

**augering.** Text and photos stress the versatility of the machine. Close-ups of major components; specifications. Data on auger bits.

Write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton, Pa., or use the Request Card at page 18. Circle No. 39.

**Lightweight diesel engine—a brochure describing the Cerlist Model 3 diesel engine, a lightweight unit developing 85 horsepower at 3,000 rpm.** Well illustrated with photographs,

**dimensional drawings, and performance curves.**

Write to Cerlist Diesel, Inc., Dept. C&E, P. O. Box 1247, Burlington, N. C., or use the Request Card at page 18. Circle No. 138.

**Portable pile hammer—literature describing the Vulcan Model DGH-100 portable differential-acting pile hammer that operates by compressed air or steam.** The rig is described as small and light enough to be carried in a jeep or pick-up truck.

Write to the Vulcan Iron Works, Inc., Dept. C&E, 327 N. Bell Ave., or use the Request Card at page 18. Circle No. 139.

**One-man vibratory compactor—a fact sheet describing the Wacker Vibro-Rammer Model GVR 100-C for use with a variety of materials including clay, earth, sand, silt, and bituminous base.** Lists the many construction and operating features, and is illustrated with photographs. Specifications included.

Write to the Wacker Corp., Dept. C&E, Hartford, Wis., or use the Request Card at page 18. Circle No. 111.

**Rock-salt stabilization—an illustrated booklet describing International Salt's simplified seven-step method of road improvement with rock salt.** According to the company, this method of rock-salt stabilization is designed for small highway departments owning modest equipment.

Write to the International Salt Co., Dept. C&E, Spruce and Adams Sts., Scranton, Pa., or use the Request Card at page 18. Circle No. 75.

**Cranes—a booklet describing Colby cranes and special equipment.** Several models shown in on-the-job photos. Data on main components.

Write to Colby Steel & Mfg., Inc., Dept. C&E, 65 Horton St., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 62.

**A pamphlet describing the Simplex method of single strand cable tensioning for prestressing concrete.** Lists the benefits of the method and includes illustrated description of a Simplex single strand prestressing jacking assembly. Form X340.

Write to Templeton, Kenly & Co., Dept. C&E, 16th and Gardner Road, Broadview, Ill., or use the Request Card at page 18. Circle No. 60.

**Cutting torches—a folder describing Oxweld flame-cutting equipment, including torches that can be used interchangeably with every fuel gas combination.** Covers manual and machine cutting equipment for use on every flame-cutting job from thinnest sheet metal to risers 10 feet thick. Form 1174.

Write to the Linde Co., Division of Union Carbide Corp., Dept. C&E, 30 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 76.

**Tractor-dozers—a well illustrated catalog detailing the operating and construction characteristics of Michigan Models 180, 280, and 380 tractor-dozers.** On-the-job photos; close-ups of major components; charts; sketches.

Write to the Clark Equipment Co., Construction Machinery Division, Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 101.

**Scaffolds—a catalog on the Superior Scaffold Co.'s line of Auto-Lock tubular steel scaffolds.** Includes dozens of "how to" tips for a wide variety of scaffold operations such as bracing for height; scaffolding flat, sloping, and curved ceilings; how to cut costs on exterior scaffolds; and shoring installations. Catalog CF-201.

Write to the Superior Scaffold Co., Dept. C&E, 5624 Bankfield Ave., Culver City, Calif., or use the Request Card at page 18. Circle No. 35.

## BIGGER PAY LOADS

with **OWEN** aluminum buckets



The combination of alloy aluminum plate with steel in the bowl construction of material handling buckets . . . 2½ cubic yards and over, eliminates up to 1000 pounds of dead weight. This affords a like amount of increase in pay load when rehandling comparatively light, free-flowing materials.

The exclusive feature of the closing line lead in the center plane of the bucket eliminates sharp bends at the guide sheaves and rollers, thereby increasing the life of the closing cable from 75% to 100%.

Long, internal main-shaft bearings insure permanent jaw alignment with minimum wear. Write for further details.



**The OWEN BUCKET Co.**  
BREAKWATER AVENUE, CLEVELAND 2, OHIO  
BRANCHES: New York • Philadelphia • Chicago  
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 339



USE AN EVERHOT BRANDER TO BURN YOUR NAME OR INITIALS ON EACH TOOL OR PIECE OF EQUIPMENT



OVER A YEAR'S TIME YOUR TOOL LOSSES ARE TREMENDOUS. On every job you lose some equipment. Burn branding your name on your equipment permanently identifies it and protects you against losses. Start branding your scaffolding, tools and equipment now with the Everhot branding torch. Enjoy the satisfaction of getting full use of every dollar invested in your tools. You'll save the cost many times within the first year, in lower tool replacement costs.

USE EVERHOT CEMENT STAMPS



TAKE ADVANTAGE OF THE QUALITY OF YOUR CEMENT WORK—Name identification of your work is the lowest cost method of increasing your business.

USE EVERHOT STEEL STAMPS FOR IDENTIFYING YOUR METAL TOOLS

**Everhot Mfg. Co.**

For more facts, use Request Card at page 18 and circle No. 340

**Maywood, Ill.**

CONTRACTORS AND ENGINEERS



**A bulletin describing Leschen high-strength stress-relieved strand for prestressed concrete.** Physical properties given for 3/8 and 7/16-inch strands. Illustrated with typical stress-strain curve charts (also available in enlarged size for wall mounting). Specifications included.

Write to the H. K. Porter Co., Inc., Leschen Wire Rope Division, Dept. C&E, 2727 Hamilton Ave., St. Louis 12, Mo., or use the Request Card at page 18. Circle No. 88.

**Hardsurfacing electrodes—a hardsurfacing electrode catalog** describing more than 25 different electrodes and wires from the A. O. Smith Corp. Contains a handy guide for selecting the correct electrode or wire to use on more than 400 different types of welding equipment. Bulletin MW-222.

Write to the Welding Products Division, A. O. Smith Corp., Dept. C&E, 3533 N. 27th St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 109.

**A bulletin describing the properties, applications, and benefits of Stressrods—high-tensile alloy steel bars for prestressed concrete.** Discusses end anchorages and couplings, rod jacking and grouting facilities, and post-tensioned design applications. Illustrated with drawings.

Write to Rods, Inc., Dept. C&E, 706 Folger Ave., Berkeley, Calif., or use the Request Card at page 18. Circle No. 128.

**Bituminous plant—an illustrated folder** detailing Pioneer's Auto-batch bituminous plant. Includes a full-page cutaway showing how the plant functions, with the flow of material clearly illustrated. Also shown in cutaway is the flow of material through the dryer and elevators. Complete specifications.

Write to Pioneer Engineering, Division of Poor & Co., Inc., Dept. C&E, 3200 Como Ave. S.E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 67.

**Form oil—literature** discussing the benefits of Conoco special form oil for use on both metal and wooden forms. Points out that the oil can be applied with a spray, swab, or mop.

Write to the Continental Oil Co., Dept. C&E, P. O. Box 2197, Houston 1, Texas, or use the Request Card at page 18. Circle No. 74.

**Bulk-material handling—a 64-page catalog** covering the Syntron line of vibratory bulk-material-handling equipment. Illustrations include many typical installations. Specifications. Catalog No. 586.

Write to the Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 14.

**Portable truck scales—a bulletin** describing American Eagle 20, 25, and 30-ton-capacity portable truck scales. Details the main features of these self-contained units, stressing both the standard full-capacity and the recording-type weigh beams. Photographs, specifications.

Write to the American Scale & Vise Co., Dept. C&E, 2745 Southwest Blvd., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 140.

**Literature describing Joe Stine mechanical equipment for prestressed concrete.** Data on pull rods, pull plates, split nuts, hydraulic power units, and hydraulic jacks. Specifications; prices.

Write to Joe Stine, Inc., Dept. C&E, 6022 Chocolate Bayou Road, Houston 21, Texas, or use the Request Card at page 18. Circle No. 47.

**Aggregate production—a booklet** describing various methods of preparation, beneficiation, and handling of aggregates. Illustrated with charts, working drawings, and photographs describing the use of Wemco equipment in the aggregate industry. Complete engineering data for 10 Wemco machines used in aggregate production. Bulletin G7-B25.

Write to the Wemco Products Division, Western Machinery Co., Dept. C&E, 650 Fifth St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 40.

**Air-blown mortar—a 42-page brochure** describing the characteristics and benefits of Gunite, an air-blown mortar capable of developing very high strength. Text and photographs stress the wide variety of applications for the Gunite process. Well illustrated; general specifications included. Brochure G-55-57.

Write to the Gunite Contractors Association, Dept. C&E, 714 W. Olympic Blvd., Los Angeles 15, Calif., or use the Request Card at page 18. Circle No. 5.

**Concrete-form hardware—a catalog** covering the extensive Williams line of concrete-form hardware. Well illustrated with photographs, tables, sketches, and dimensional drawings. Indexed.

Write to the Williams Form Engineering Corp., Dept. C&E, 1501 Madison Ave. S. E., Grand Rapids 7, Mich., or use the Request Card at page 18. Circle No. 141.

**Truck-mounted rotary drill—a fact sheet** on the Portadrill Model 10TC, a heavy-duty truck-mounted rotary drill especially suited for blast-hole drilling in hard rock formations. Lists construction and operating characteristics of the machine, and is illustrated with photographs. General specifications.

Write to The Winter-Weiss Co., Dept. C&E, 2201 Blake St., Denver 5, Colo., or use the Request Card at page 18. Circle No. 16.

**Versatile welder—a folder** describing a combination ac, dc, and inert-gas Hobart welding machine. Discusses the advantages of having a welder that will do all three types of welding. Bulletin DM-71.

Write to Hobart Bros. Co., Dept. C&E, Troy, Ohio, or use the Request Card at page 18. Circle No. 142.


**Electric generating plants—an illustrated folder** discussing the factors to be considered in selecting an electric generating plant. Takes into account maximum use of electric power tools, size of work crew (listing minimum wattage requirements), portability, and weight. Gives specifications of basic Onan 500 to 10,000-watt air-cooled units. Folder F-123.

Write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 97.

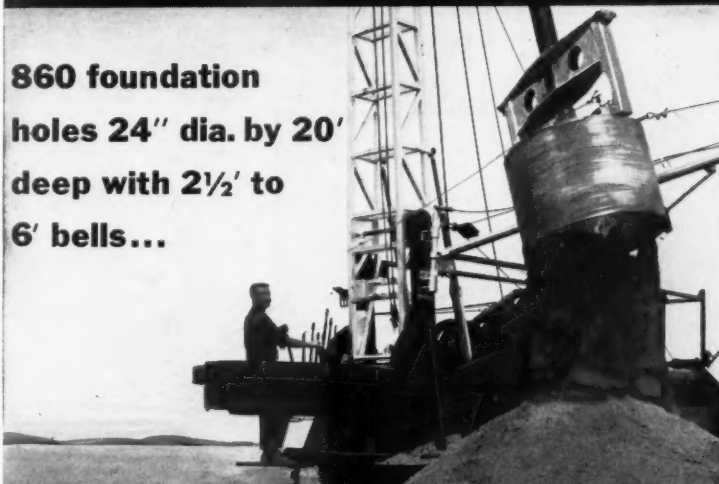
(Continued on next page)

**NEW SPEED RECORD!**

**Calweld digs 12 caissons a day**  
*and bells the bottoms!*



**860 foundation**  
**holes 24" dia. by 20'**  
**deep with 2 1/2' to**  
**6' bells...**



**AT 1/3 THE COST** of constructing conventional spread footings, six Calweld Earth Drills recently dug 860 holes for drilled-in-place caissons—at speeds up to 12 complete caissons per rig per day! Hitting a record smashing day's rate of 74 completed drilled-in-place caissons, the six rugged Calweld rigs rang up 641 completions in only 14 days!

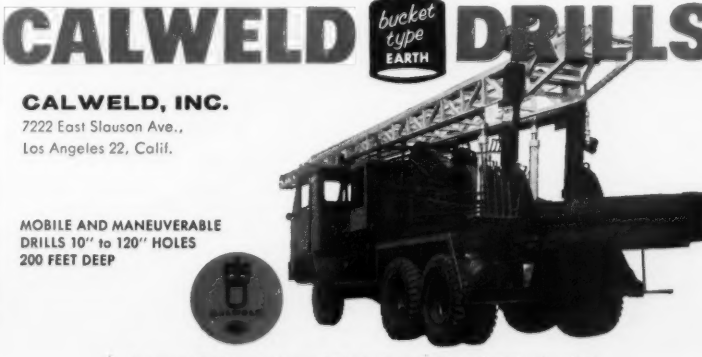
Performing under adverse conditions, frequently in frozen ground, the Calweld Earth Drills dug 20-foot holes 24 inches in diameter...belled the bottoms from 2 1/2 to 6 feet...placed reinforcing steel cages in all holes...placed steel casings in 25% of the holes...and pulled the casings after concrete was poured.

This outstanding performance is typical of what Calweld Earth Drills can do for you. They can drill any size hole from 10" to 10' in dia. to a depth of 200'. Write for factual job report "Earth Borers Dig Caisson Holes."

**CALWELD DRILLS**

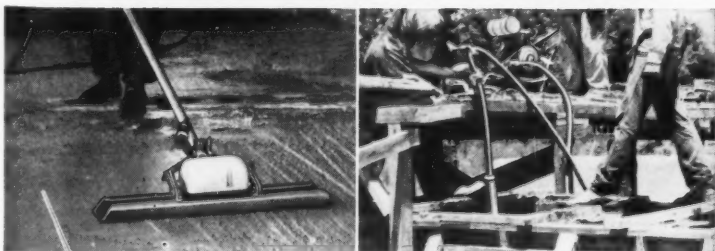
**CALWELD, INC.**  
7222 East Slouson Ave.,  
Los Angeles 22, Calif.

**MOBILE AND MANEUVERABLE**  
DRILLS 10" to 120" HOLES  
200 FEET DEEP



For more facts, use Request Card at page 18 and circle No. 342

## SYNTRON CONCRETE VIBRATORS & FLOATS



**Save time and labor settling and finishing concrete . . .**

SYNTRON Vibratory Floats take the hard work out of floating concrete. Their 3600 vibrations per minute produces a denser, stronger vibrated concrete—making stronger, safer and more durable floors, side walks, drives, etc.

SYNTRON Electromagnetic Form Vibrators, equipped with quick-acting vise clamps assure faster more uniform settling of concrete.

Faster settling and handling means reduced costs—increased production and profit.

Write for FREE catalog data.

C558

**SYNTRON COMPANY**

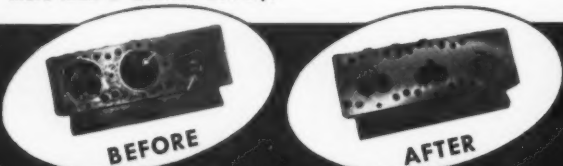
227 Lexington Ave.

Homer City, Pa.

For more facts, use Request Card at page 18 and circle No. 341

## DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process... successfully used for more than a Quarter Century.



Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

### SWICK-GUTH CO.

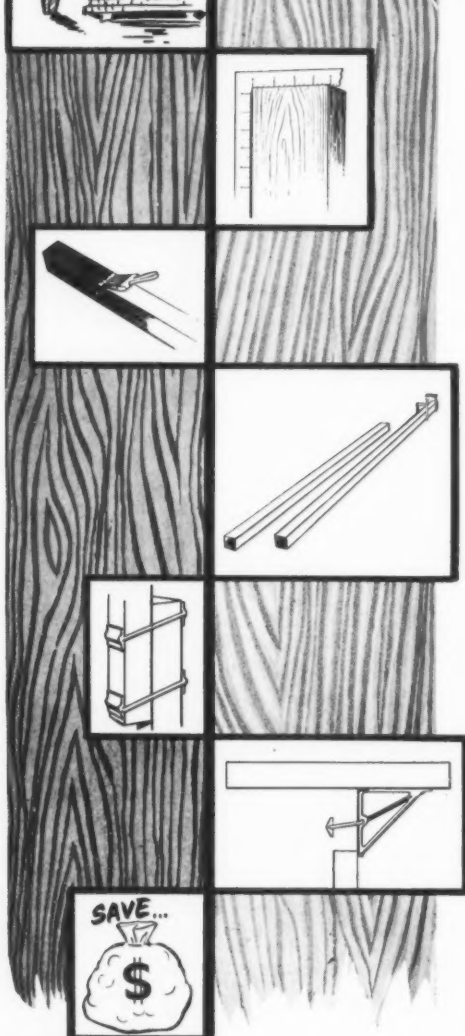
MCPHERSON, KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING"

DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 343

## Sure! You Can Use Your Own WOOD for Shoring with ELLIS METHODS



Now — with a few simple Ellis Metal Parts — contractors who have a good supply of forming lumber can make use of their own wood for better, more economical shoring with Ellis Methods.

Just select your best 4 x 4's for lower shore members, cut 7' lengths and square the ends.

Paint or stain these lower shore members with some distinctive color, such as green. This protects the wood and serves notice that these pieces are not to be sawed or damaged.

One inch from the top of each lower shore member attach a pair of Ellis Clamps, one foot apart. The clamps will fold down when not in use, for easy stacking and storing.

Upper shore members are similar sticks without any parts attached. These slip easily through the free ends of the clamps on the lower members, are quickly adjusted to height, and are held by the patented Ellis Pivotal Plates on the clamps.

Shoreheads, purlins, and other wood members can also be made from your own wood supply, with Ellis Head Clamps and Slip-in Shore Holders attached.

Because of the extremely low cost of Ellis Metal Parts, and greater speed and simplicity offered by Ellis Methods, you can actually make tremendous savings on shoring for suspended reinforced concrete work.



No bother with heavy metal tubes or cumbersome equipment when you shore with Ellis Methods! Enjoy the economy of using your own wood supply plus small Ellis metal parts and have the satisfaction of knowing that you are using the most modern, fast, economical, adaptable and safe methods in the concrete building industry. Write for complete details and include specifications on your next job. We will furnish, free of cost, suggestions on the best methods to follow for your specific job.

## Ellis MFG. CO., INC.

211 N.W. 4TH STREET • OKLAHOMA CITY, OKLA.

For more facts, use coupon, or Request Card at page 18 and circle No. 344

ELLIS MFG. CO. Inc.  
211 N.W. 4th, Okla. City:  
Send me, without obligation, more details on Ellis Methods using local lumber supply.

Name .....  
Address .....  
City ..... State .....

## Product Literature—yours for the asking!

**Heavy-duty ripper**—literature describing the Ateco Super HR72-D9 tractor-mounted pipeline ripper. Discusses the construction characteristics of the unit, and is illustrated with sketches and photographs. Specifications included.

Write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro St., Oakland, Calif., or use the Request Card at page 18. Circle No. 33.

**Scaffolding**—a case-history-type brochure on the benefits of Patent scaffolding. Text and on-the-job photographs cover the use and advantages of the firm's scaffolding on a variety of jobs.

Write to The Patent Scaffolding Co., Inc., Dept. C&E, 38-21 12th St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 112.

**Mobile hydraulic hammer**—a bulletin on the Arrow mobile hydraulic hammer. On-the-job photos show the unit cutting asphalt, breaking concrete, tamping backfill, and driving guardrail posts. Condensed specifications.

Write to the Arrow Mfg. Co., Dept. C&E, 194 W. Dakota St., Denver, Colo., or use the Request Card at page 18. Circle No. 15.

**Hand winches**—a bulletin on Beebe hand winches. Describes and illustrates several models ranging in capacities from 250 pounds to 15 tons. Data on accessories; specifications.

Write to Beebe Bros., Dept. C&E, 2724 Sixth Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 89.

**Screed**—an illustrated brochure describing the new Thor vibratory concrete finishing screed. Stresses the unit's double-beam construction with "strap-action" for strike-off and compacting to finish concrete slabs in one operation. Brochure JE-2346.

Write to the Thor Power Tool Co., Dept. C&E, Prudential Plaza, Chicago 1, Ill., or use the Request Card at page 18. Circle No. 37.



A folder describing the Prestressed Equipment Co.'s new system for the **single-strand tensioning of prestressed concrete**. Also contains data on strand releasing. Illustrated with drawings.

Write to the Prestressed Equipment Co., Dept. C&E, P. O. Box 1264, Lakeland, Fla., or use the Request Card at page 18. Circle No. 143.

**Soils, concrete, asphalt testing**—a 128-page catalog covering the complete line of Testlab equipment for engineering tests on soils, concrete, and asphalts. Illustrated with photos. Indexed for convenience. Price list included.

Write to the Testlab Corp., Dept. C&E, 250 W. 57th St., New York 19, N. Y., or use the Request Card at page 18. Circle No. 32.

**Pipe tools**—a catalog covering Spring Load pipe tools. Describes and illustrates several models of pipe cutters, gravity grip vises, and machining and tapering tools for asbestos-cement pipe. Price list included.

Write to the Spring Load Mfg. Corp., Dept. C&E, 6332 Maynard Ave., Seattle 8, Wash., or use the Request Card at page 18. Circle No. 63.

**YOU JUST DRIVE ON to load whatever you haul, on a MILLER Tilt-Top**

**front end loaders**

**"OT-15"**  
Over-the-wheels, 8' x 16'-6" platform, 18' and 20' platforms available. Eight wheels, dual assemblies, mounted on tandem axles with oscillating walking beam. 15 ton capacity. Also available with goose-neck for tractor towing unit.

**"BT-10" & "CT-7"**  
Extra low, load angle, between-the-wheels platform, 76" wide — either 14' or 16' long. Four single wheels mounted on tandem axles with oscillating walking beam. 10 ton capacity on "BT" . . . 7 ton on "CT".

**"J-6", "8" & "10"**  
Heavy duty over-the-wheels models. 8' x 14' platform — 16' and 18' platforms available. Single axle, dual wheels. Capacity: "J-6", 6 tons; "J-8", 8 tons; "J-10", 10 tons.

**"C-4"**  
Extra low loading angle, between the wheels platform 8' x 14', 16' platform available. Two single wheels mounted on straight-thru H beam axle. 4 ton capacity.

**"H-4"**  
Over-the-wheels, 8' x 14' platform — 16' platform available. Single straight-thru axle, dual wheels. Completely equipped with heavy duty, first line trailer tires. 4 ton capacity.

• A variety of Tilt-Top models equipped with single or tandem axles . . . over, or between-the-wheel platforms . . . put mobility under all sorts of equipment from 4 to 15 tons . . . save the extra loading time and extra cost of larger more cumbersome trailers. ONE man can tilt, drive on a rig and be off to the next job in less than TWO minutes. See your MILLER distributor now—find out how MILLER'S fast between job loading and hauling . . . can often help you to save duplicating expensive equipment on several jobs.

✓ **built best**  
✓ **priced best**  
See your MILLER distributor or write for FREE literature to:

## Miller Tilt-Top Trailer Inc.

456-J S. 92nd St., Milwaukee 14, Wisc.

For more facts, use Request Card at page 18 and circle No. 345

CONTRACTORS AND ENGINEERS



chure  
atory  
s the  
with  
and  
bs in  
6.  
Co.,  
icago  
page

Pre-  
s new  
**rand**  
**crete.**  
leas-  
ment  
ake-  
rd at

esting  
the  
ment  
con-  
with  
ience.

Dept.  
k 19,  
page

ering  
s and  
e cut-  
ining  
s-ce-

Mfg.  
Ave.,  
quest



**r**  
**nc.**  
Wisc.

GINEERS

Use the  
Request Cards  
Between  
Pages 18 & 19  
To Obtain  
Further  
Information  
or Printed  
Matter on  
Any Product  
Advertised  
or Described  
Editorially  
in This  
Issue

Use the  
Request Card  
Between  
Pages 18 &  
To Obtain  
Further  
Information  
or Printed  
Matter on  
Any Product  
Advertised  
or Described  
Editorially  
in This  
Issue

o  
po  
st  
co  
da  
m  
pe  
or  
tic  
og  
in  
sta  
wr  
the  
the  
be  
cre  
unc  
per  
tra  
the  
wri  
was  
com  
T  
Gra  
2d  
Sup  
T

TH  
wi  
de  
tro

Th  
eco  
cos  
anc

W  
als  
fro

GO

SEPTEMBER



## Avoid legal pitfalls

### Oral changes of contracts

**THE PROBLEM:** A subcontract to paint and supply materials for construction undertaken by the general contractor specified: "Without invalidating this contract, the contractor may add to or reduce the work to be performed hereunder. No extra work or changes from plans and specifications under this contract will be recognized or paid for, unless agreed to in writing before the extra work is started or the changes made. The written order shall specify in detail the extra work or changes desired, the price to be paid, or the amount to be deducted should said change decrease the amount to be paid hereunder." The contractor's general superintendent required the subcontractor to do work not covered by the contract, but refused to sign a written work order, saying that it was not necessary. Could the subcontractor collect for the extras?

**THE ANSWER:** Yes. (Wagner v. A. Graziano Construction Co., 136 Atl. 2d 82, decided by the Pennsylvania Supreme Court.)

The court reasoned that when a

certain kind of contract is not required by law to be in writing, it may be modified orally by the parties. In short, a present agreement that any future agreement must be in writing does not tie their tongues.

### Contract clause on attorney's fees

**THE PROBLEM:** In Florida, as in many other states, a contract involving payment of money may provide for assessment of an attorney's fee to reimburse the obligee of the bond for expense incurred in having to sue to collect what the obligor owes. The payment bond given by the contractor on a county school job did not provide for assessment of an attorney's fee if the contractor failed to pay a materialman. Nor did the contract between the materialman and the contractor provide for such a fee. But the bond given by the contractor to the county school board did bind the surety for any default by the contractor under the prime contract. That contract, by reference to the bidding specifications, provided for payment of an attorney's fee in a suit by the school board on the bond.

A materialman sued on the bond in the name of the board for a sum due from the contractor. Was the surety liable for an attorney's fee?

**THE ANSWER:** No. (Pan American Surety Co. v. Board of Public Instruction of Dade County, 99 So. 2d 890,

### Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

decided by the Florida District Court of Appeal, Third District.)

The court said that the attorney's fee clause was for the benefit of the school board only, if it should have to sue the contractor for breach of the prime contract.

### Trespassing child injured

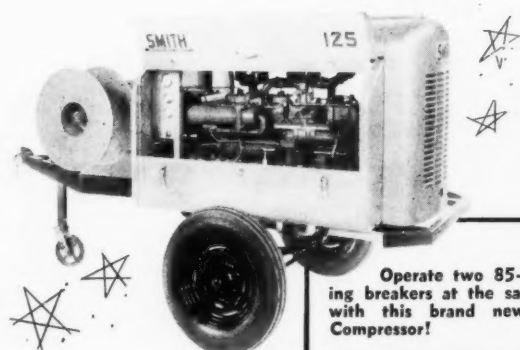
**THE PROBLEM:** The courts generally recognize that a contractor is liable for injuries to children trespassing on a construction site when work is not in progress, when there are no watchmen on the job, and when the particular accident could have been foreseen and no steps were taken to prevent it.

Carpenters had left a piece trimmed from a composition shingle on an unfinished roof. A trespassing boy threw the shingle piece from the roof and it struck another youngster in the eye. Was the foreman of carpenters liable in damages for the injury?

**THE ANSWER:** No. (Massino v. Smaglick, 89 N. W. 2d 223, decided by

## Profit-Paying WAUKESHA POWER FOR CRANES AND SHOVELS

## Announcing the New Smith 125



Operate two 85-lb. paving breakers at the same time with this brand new Smith Compressor!

This newest member of the Smith family of compressors is built with a heavy-duty industrial type 6-cylinder engine. Three cylinders are for power; three for compression. The Smith 125 is a trouble-free compressor with a minimum of gaskets and gadgets.

The Smith "Governair" regulates air supply to air demand for economy and long life. You have lower first cost, lower operating cost and lower maintenance cost because of sound engineering and simple, compact design.

Write today for complete details on the new Model 125-P and also other Smith Compressors in portable and stationary models from 45 to 220 cfm.

## GORDON SMITH & COMPANY, INC.

Dept. 483

Bowling Green, Kentucky

For more facts, use Request Card at page 18 and circle No. 346

SEPTEMBER, 1958

**WUKESHA 135 DIESEL**  
Torque Converter Package—  
4 1/4 x 5-in., 426 cu. in.

**WUKESHA VLRD5U**  
V-12 Turbo-Supercharged DIESEL  
8 1/2 x 8 1/2-in., 5788 cu. in.

Complete size range to 1235 hp  
... all standard fuels.

Logos: HANSON QUALITY, CLARK EQUIPMENT, "QUICK-WAY", Lorain, Manito, UNIT, GarWood, LINK-BELT SPEEDER, KOEHRING HEAVY DUTY, INSLEY, ORTON, BAY CITY, AMERICAN HOIST, LIMA, MARION.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK

TULSA

LOS ANGELES

For more facts, use Request Card at page 18 and circle No. 347

## Avoid legal pitfalls

the Wisconsin Supreme Court.)

The court reasoned that the object was not inherently dangerous and that, therefore, the accident was not foreseeable.

### Negligent truck driving

**THE PROBLEM:** A speeding dump truck working on a dam project came off a side road and made a right turn onto a paved highway without stopping and without warning. It cut onto the highway only a short distance ahead of an automobile. The automobile driver slammed on the

brakes, and his car skidded across the wet pavement into the path of another automobile approaching from the opposite direction.

Were the driver and the owner of the truck jointly liable for the damage done in the resulting collision of the two cars?

**THE ANSWER:** Yes. (Dufour v. Taranto, 100 So. 2d 304, decided by the Louisiana Court of Appeal, New Orleans.)

### Right to payment accrued

**THE PROBLEM:** Plaintiff agreed to fabricate skylights for the defendant subcontractor, and payments were to be made as requisitioned by the plaintiff. Plaintiff fabricated the skylights according to contract and delivered them to the subcontractor. Was plaintiff entitled to be paid the agreed price with interest from the respective dates when installments of payment were due, without waiting until the subcontractor received full payment from the general contractor?

**THE ANSWER:** Yes. (E. Van Noorden Co. v. Hartford Roofing & Sheet Metal Co., 147 N. E. 2d 749, decided by the Supreme Judicial Court of Massachusetts.)

### Workmen's compensation

**THE PROBLEM:** Plaintiff's husband was killed while dismantling walls of a building which defendant had bought from a school district. The deceased, under contract to raze the building, was experienced in that work and had the necessary equipment for the job. He was also a contractor on other jobs, and used his own employees on this particular one. Did the Kansas Workmen's Compensation Law entitle plaintiff to benefits as widow?

**THE ANSWER:** No. (Snedden v. Nichols, 317 Pac. 2d 448, decided by

the Kansas Supreme Court.)

Deceased must be classified as an "independent contractor", and not as an employee of the defendant.

### Owner liable on check

**THE PROBLEM:** The owner issued a check to a contractor as final payment. The contractor endorsed it to a materialman. But the owner stopped payment before the check was cleared, claiming that work was defective. The materialman did not know that payment had been stopped nor that the owner claimed the work was defective. Was the owner liable to the materialman for the check?

**THE ANSWER:** Yes. (Boston Post Lumber Co. v. Rubin, 169 N. Y. Supp. 2d 939, decided by the New York

Supreme Court, Bronx County.)

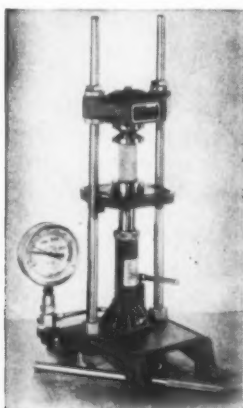
The court said that the materialman was not bound to ascertain whether or not the contractor had fulfilled his contract, even if the materialman had recommended him to the owner as being competent and reliable.

### Delays not excused

**THE PROBLEM:** A contract for work on a public building specified that the contractor should pay \$22.50 for each day's delay in completion beyond 120 days. The contractor knew that needed materials might not be presently available. Could he later excuse delayed performance on the ground of unavailable materials?

**THE ANSWER:** No. (Kelly v. Board of

## Cut Road Building Costs with SOIL AND BASE MATERIAL TESTS... on the CARVER LABORATORY PRESS



Numerous soil tests necessary prior to road building or other construction can be quickly and easily accomplished on the portable, hand-operated, self-contained CARVER LABORATORY PRESS. Moisture content, compaction, shear and other soil or base material characteristics are readily determined with this on-the-spot equipment.

Samples are quickly pressed for soil tests or further analysis and testing with Carver Test Cylinders, available in two sizes—1½" and 2¼" diameter. Other Standard Accessories available include Carver Swivel Bearing Plates for comparative crushing tests of 2" x 2" cubes; 2" x 4" cylinders and like requirements.

Several state road departments have used this equipment successfully for years. A Florida State Road Dept. engineer reports "Six Carver Presses are used daily for the numerous soil tests—." They have recently purchased four additional presses. The Texas State Highway Dept. has purchased over 30 Carver Laboratory Presses for such use—perhaps this thoroughly standardized Press will answer your pressing problems.

- CRUSHING TESTS • BRIQUETTING
- BREAKING TESTS • SHEAR TESTS
- BENDING TESTS

**FRED S. CARVER INC.**  
HYDRAULIC EQUIPMENT  
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME .....

FIRM .....

ADDRESS ..... 16

For more facts, use coupon or circle No. 348

136



## Only Jaeger delivers 600 cfm at 1650 rpm

Although powered with the same GM 6-71 diesel engine as the Jaeger "600", other compressors run 150 rpm faster to produce the same 600 cfm of air. In 8 hours' continuous operation a Jaeger averages 72,000 fewer revolutions, saves miles of engine piston travel and many pounds of fuel. Jaeger "125", "250" and "365" sizes are comparably efficient. See your Jaeger distributor for complete cost-saving data, or request Catalog JC-7.

**THE JAEGER MACHINE CO., 701 Dublin Ave., Columbus 16, Ohio**

For more facts, use Request Card at page 18 and circle No. 349

**ANOTHER BMCO FIRST!**

**13 WHEEL SELF-PROPELLED ROLLER**

**MORE COMPACTION FEWER PASSES 50% LARGER**

**NOW . . . YOU CAN CUT YOUR COMPACTION TIME IN HALF!**

This new exclusive BMCO 13 wheel roller makes it possible for you to do the same amount of work in half the time!

With complete oscillation on all wheels and power steering this 13 wheel BMCO compactor is easy to handle. With the largest power unit in its class and extra displacement . . . this is the compactor for you in '58.

For more information write, wire, or phone!

**BROWNING MANUFACTURING CO.**

111 HUMBLE AVENUE SAN ANTONIO 6, TEXAS P. O. BOX 2707

For more facts, use Request Card at page 18 and circle No. 350

CONTRACTORS AND ENGINEERS



Education of City of New York, 169 N. Y. Supp. 2d 405, decided by the New York Supreme Court, Special Term, Kings County.)

### Excavation is "labor"

**THE PROBLEM:** The prime contractor on a municipal housing job gave bond to pay "for all work done, or skill, tool, machinery, supplies, labor, and materials furnished". A subcontractor hired the owner of a ditching machine to excavate trenches on a linear footage charge basis. Did the bond cover the charges of the machine owner?

**THE ANSWER:** Yes. (H. F. Vann Nieuwenhuyse & Sons Construction Co. v. Irby, 99 So. 2d 651, decided by the Mississippi Supreme Court.)

The court rejected the argument that the claim was for machine rental and not for labor, and that a person employed by the subcontractor to perform work was not within the coverage of the bond. The court could not see any distinction between a laborer digging a ditch at so much per linear foot with his own shovel and digging one with his own machine.

### Federal tax lien versus mechanic's lien

**THE PROBLEM:** The federal government filed notice of a tax lien against a contractor because of delinquent withholding and social security taxes. Later, a subcontractor filed a mechanic's lien against the property on which work had been done. Under federal law, was the tax lien superior to the mechanic's lien?

**THE ANSWER:** Yes. (Aquilino v. United States, 146 N. E. 2d 774, decided by the New York Court of Appeals.)

The court said that even an earlier recorded mechanic's lien, not reduced to judgment, is subordinate to a later recorded federal tax lien.

### Gravel pit contract

**THE PROBLEM:** The owner of land, potentially valuable for residential use, sold sand and gravel in place for \$190,000, payable over a term of 15 years. For the purposes of the seller's income tax liability, did the transaction constitute a sale of the sand and gravel, or a lease of the land for the purpose of removing the materials?

**THE ANSWER:** A sale. (Barker v. Commissioner of Internal Revenue, 250 Fed. 2d 195, decided by the United States Court of Appeals, Second Circuit.)

The seller was therefore entitled to have the payments treated as long-term capital gains, as against the less favorable treatment of the payments as current income adopted by the federal income tax authorities.

### Cashed check did not bar additional compensation

**THE PROBLEM:** During a dispute concerning a contractor's right to additional compensation, the contractor wrote the owner that he would not

accept, as final settlement, a check for the amount which the owner conceded to be due. The owner later sent a check for the amount, with the notation: "balance due contract". Did that bar the contractor from suing for more?

**THE ANSWER:** No. (Earl T. Browder, Inc. v. County Court, Webster County, W. Va., 102 So. 2d 425, decided by the West Virginia Supreme Court of Appeals.)

### Gravel hauler is employee

**THE PROBLEM:** A gravel company engaged a truck owner to haul gravel.

Either party could terminate the arrangement at will, and the gravel company had the right to control the operation of the truck, which it did. The hauling service was paid every 14 days on a yardage-and-distance basis. The company controlled loading operations, using its own machinery and fixing the time of loading. For workmen's compensation purposes, was the truck owner an employee of the company and not an independent contractor?

**THE ANSWER:** Yes. (Wade v. Traxler Gravel Co., 100 So. 2d 103, decided by the Mississippi Supreme Court.)

### License taxes

**THE PROBLEM:** A company manufactured creosoted piling, lumber, and poles which were sold principally on competitive bids to contractors, governmental agencies, etc. Wholesale sales were negligible. Was the company exempt from statutory license imposed upon "retail dealers", on a theory that an exemption of "manufacturers" applied?

**THE ANSWER:** No. (American Creosote Works, Inc. v. Collector of Revenue of Louisiana, 101 So. 2d 245, decided by the Louisiana Court of Appeals, New Orleans.)

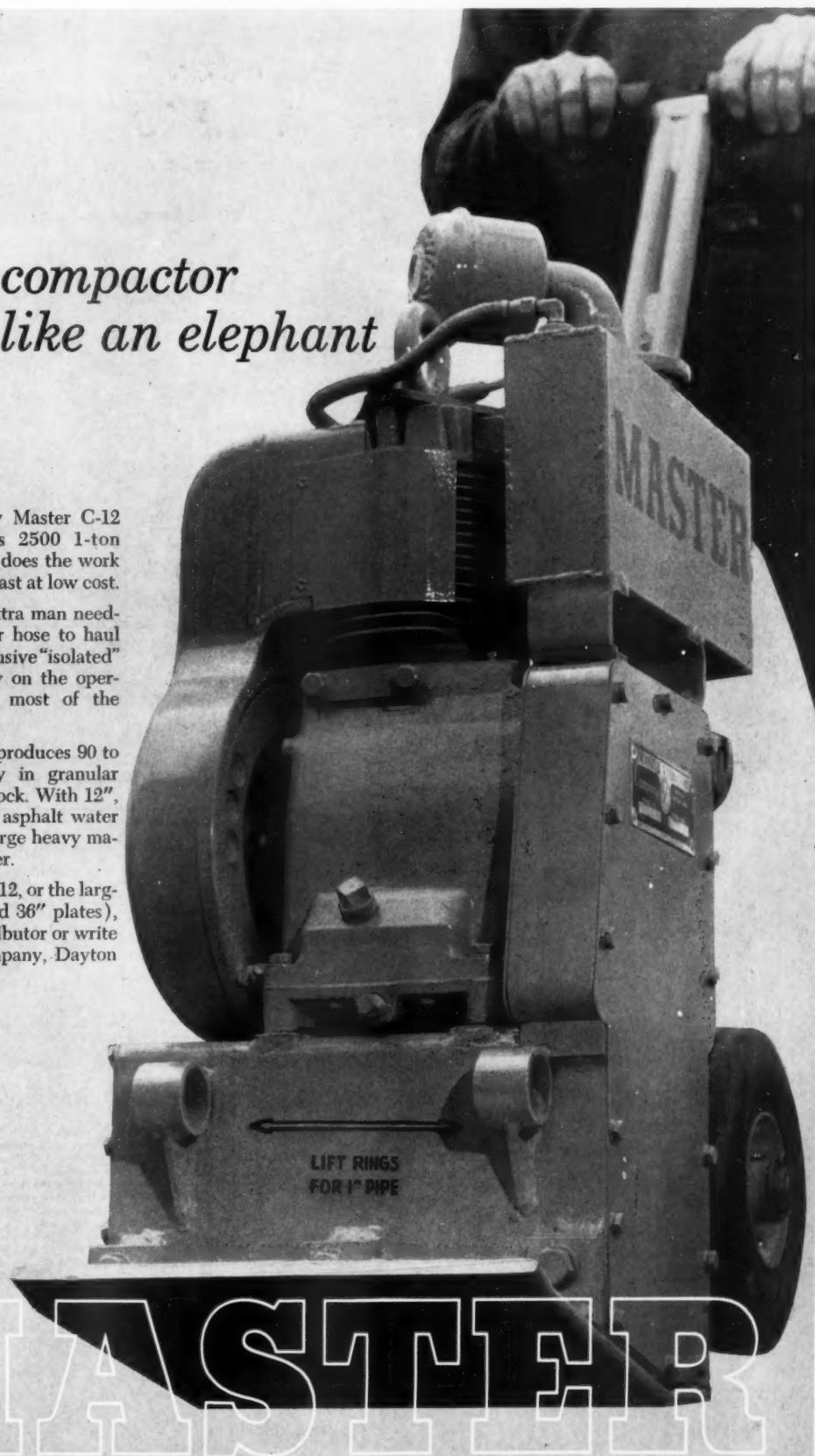
## 236 lb. compactor stomps like an elephant

**POWERFUL**—The new Master C-12 compactor punches 2500 1-ton blows per minute... does the work of a 10-ton roller... fast at low cost.

**HANDY**—there's no extra man needed; no compressor or hose to haul around. Master's exclusive "isolated" handle makes it easy on the operator by dampening most of the vibration.

**EFFECTIVE**—it easily produces 90 to 100% Proctor density in granular soil, sand, gravel or rock. With 12", 18" or 24" plates or asphalt water shoe, it goes where large heavy machines can't maneuver.

For facts about the C-12, or the larger C-36 (24", 30" and 36" plates), call your Master distributor or write Master Vibrator Company, Dayton 1, Ohio.



... the light construction equipment used by most contractors: bridge deck finisher; vibratory screeds; "1-Man" vibrators; gas and electric powered flexible shaft vibrators; vibratory compac-

tors; 29" power trowel; 34" Powermatic trowels; 34" and 48" Turn-A-Trowels; disc floats, grinding heads; 750 watt to 5KW generators; 125,000, 250,000 and 400,000 BTU heaters.

## Planning and production: Work simplification

This is the thirty-fourth of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, Satsuma, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.



by **GEORGE E. DEATHERAGE, P. E.**  
construction consultant



### Step **UP** and take a **FULL** Swing with the

## HY-HOE Model 380

Yes, step up—get out of that profit-stealing half-swing class with this bonus-laden backhoe.

Put that big  $\frac{3}{8}$ -yard bucket to work for you, take advantage of that 23-foot reach in all directions, make money with that 12-foot 8-inch clearance—here's a machine that'll load any truck that rides the highway.

And she'll eat dirt to a depth of 14 feet, in normal soil trenching 150 feet hourly, excavating 60 to 70 yards per hour. Live, positive power in all operations!

The HY-HOE Model 380 Hydraulic Backhoe is the practical and economical way to step up to bigger profits. The cost is only slightly more than the price of a half-swing machine, and any used truck of  $2\frac{1}{2}$  tons or more will carry the HY-HOE. . . .

So step up! Take a full swing! Get more work with the HY-HOE 380!

For complete information write

### HYDRAULIC MACHINERY COMPANY

3629 W. Elm Street, Milwaukee, Wisconsin

For more facts, circle No. 352

### Fast tool repairs for Black & Decker tool owners



Genuine  
**Black & Decker**  
PARTS & SERVICE  
available near you

- ★ Free Inspection
- ★ Standard B&D Guarantee



Look in Yellow Pages under "Tools Electric" for address of nearest FACTORY SERVICE BRANCH

Or write direct for address of nearest branch to:



**Black & Decker**  
QUALITY ELECTRIC TOOLS

**FREE!** USE and CARE HANDBOOKS are available for each B&D Tool. Specify tools you own. write: THE BLACK & DECKER MFG. CO., Dept. S3609, Towson 4, Md.

For more facts, circle No. 353

### CONTRACTORS TRUCK CRANE



### one man operated — fully hydraulic

Here's a versatile, fully hydraulic, one-man operated truck crane that's an ideal contractors' utility tool. The HIAB 170 offers a range of lifting capacities from 6,000 lbs. on the shortened boom of 5' to 2500 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control. Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 20" per second. Control is from either side of the truck cab. Crane action is positive and accurate. 200° or 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE FOR THE NAME OF YOUR NEAREST DEALER



1664 Ninth St. (Corner of Olympic & Ninth)  
Santa Monica, California

For more facts, circle No. 354

Simple process charts record and analyze the activities or movements of workmen or materials. Individual motions made by the workmen to accomplish a certain task can also be broken down and studied. This is a motion study, and it is useful in finding out if a man is doing his job efficiently.

It is possible, for instance, to chart or clock a bricklayer to see if he is using the fewest possible motions to lay the greatest number of bricks. Timing each of the bricklayer's motions with a stop watch, in order to cut the time and step up production, is termed a time study. A combination of the two operations is a time and motion study—a study of all the motions gone through by an individual workman to perform a task which is being done time after time during the shift.

The object of a time and motion study is to measure what is being done and what can be done on a job, and to establish and measure what is possible for the workman to do when he is trained in the most efficient work methods. The time and motion study covers the workman using his hand tools, or aided by machines, and the techniques to secure maximum production from both types of work.

### Motion analysis

Most manual work is done with two hands, and a few fundamental motions are repeated time and again. However, this does not mean that an equal number of motions, or an equal amount of work, is done by both hands. One hand may be idle, holding the work in place, while the other hand is engaged in active work.

A bricklayer usually holds the brick in his left hand while he applies the mortar from the trowel with his right hand. Momentarily, the left hand is idle. After laying the brick in place, he taps it down with the trowel, and the left hand again is idle.

The ideal situation is to establish the number of useful motions and divide the work equally for two hands so that idle motions are eliminated. This should result in a minimum amount of time needed for the work cycle.

It is an easy matter to get to know the fundamental motions for almost all work. For example, in bricklaying the sequence of motion for the left hand is "transport empty" (reach for the brick); "grasp" (take hold of the brick); "transport loaded" (carry the brick to the wall); "position" (turn brick in proper position to butter);

CONTRACTORS AND ENGINEERS



The right hand would be idle part of the time, assuming that the bricklayer held on to his trowel. It would come into play only after the left hand had made four motions, reaching the point where the mason was ready to butter the brick. He might, at this point, have already put mortar on the trowel or, if not, he would have to reach over the mortar box for the mortar and transport it back to where the left hand was positioning the brick for buttering.

Because it is nearly impossible to



# STEEL-SHEET PILING

**get the exact job lengths  
and exact job sections  
on the Foster Rental Plan**

We'll deliver your complete piling needs immediately, *anywhere* in the country, from our nationwide warehouse and field stocks—"Faster-from-Foster"

For help in ordering write or call the Foster office nearest you for free Piling Wall Chart No. CE-9



SINCE 1901

 **COMPLETE CONTRACTOR SERVICE**

**PILING • PIPE • RAIL • HIGHWAY PRODUCTS**

**LB FOSTER co.**

PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7  
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5  
For more facts, circle No. 355

SEPTEMBER, 1958

In posting the movements, the operator should first set down movements as they occur, without timing them. Once this has been done for both hands, and checked through several work cycles, the movements are timed. The clock readings are posted first, and then the time consumed is calculated and set down.

The symbols and a short description of the most commonly used hand motions, Figure 2, are from the textbook "Work Methods Manual," by Ralph M. Barnes. Priced at \$3.50, the book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

The starred symbols refer to separate physical fundamental motions, and are the only ones used to chart motion or work. The others are descriptive of those motions which further detail what is happening.

### Work simplification

Analysis sheets and symbols for a time study are the basis for a study of work simplification that is aimed at finding the cheapest and fastest way a job can be performed. There are ten basic principles of motion economy which form a code for studying work simplification. These principles are the basis upon which other factors are built or associated. Anyone familiar with their use and application can do much to reduce costs and, in some cases, to cut them in half or more.

The first principle is that motions of two hands should be simultaneous and symmetrical. Symmetrical motion means that both arms swing out or in from the body in somewhat similar manner, the motions balancing each other. When the left hand reaches up to get something or to do something, while the right hand pulls an object toward one, the motions are not symmetrical. They are unbalanced motions that put a strain on the workman, causing undue fatigue and jar on the body.

Contrasted to this is motion in which both hands swing outward simultaneously in a half circle in order to pick up something or do work. Here is a harmonious balance of the body members, more work being done with less effort. More and faster work can be done if both hands work together, beginning and completing a motion at the same time.

It is advantageous to provide similar work on the right and left-hand sides of the work place, enabling both hands to move together in performing the same motions. The greatest advances in the use of these methods occur in bench work, where the tools and materials can always be located

(Continued on next page)

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p><i>Gen. L. Duthouge &amp; Son</i></p> <p>ANALYSIS SHEET</p> </div> <div style="text-align: right;"> <p>CHART NO <u>515</u></p> </div> </div>			
SHEET NO <u>1</u> OF <u>2</u>			
OPERATION <u>Group Housing</u>		DATE <u>8/25/52</u> OPER NO <u>21</u>	
MACHINE <u>None</u>		ANALYSIS BY <u>R. G. D.</u>	
OPERATION DETAIL <u>Laying 21-inch face, select mark floor over</u>		OPER NAME <u>A. Simmons</u>	
<u>pine sub-floor. Bundled flooring delivered to work place by</u>		JMT <u>S. F.</u> RATE <u>52.40</u>	
<u>helpers, and bundles broken open.</u>		CONT NO <u>1789</u>	
		COST CODE <u>AM</u>	

KNOW KNOW KNOW	KNOW KNOW KNOW	KNOW KNOW KNOW	KNOW KNOW KNOW	LEFT HAND DESCRIPTION	KNOW KNOW KNOW	KNOW KNOW KNOW	KNOW KNOW KNOW	RIGHT HAND DESCRIPTION
				(P - repeater to kneeling position on floor)				(Tools at hand)
				P' Bends body over				TR Reaches for hammer
				U Hand supports body				G Grasps hammer
								TL Hammer to front position
				St Selects flooring				
				TS				

**Figure 1.**

# Weldynamics

## ARC WELDING AT WORK CUTTING COSTS

## IF YOU...

## BATTER IT...

## GRIND IT...

**OR JUST WEAR IT...**

# YOU CAN GET LONGER LIFE with Lincoln Hardsurfacing

**Lincoln Hardsurfacing Electrodes are specially designed to resist specific types of wear. This means you can apply a surface that will give longest life under the wear conditions *you* are experiencing.**

**JET-HARD BU-90** For fast build-up of considerably worn parts where several layers of deposit are required. Deposits more metal per minute than other build-up rods. A high impact deposit with 25% - 50% more abrasion resistance than conventional high-carbon build-up electrode. Excellent for build-up of parts prior to hardsurfacing with Abrasoweld or Faceweld.

**ABRASOWELD** Resists severe impact and moderately severe abrasion. Provides surfaces with hardness to 55 Rockwell C. Especially good for dipper teeth, rock crusher hammers and other parts that come into contact with hard, solid obstacles.

**FACEWELD** Resists severe abrasion and moderate impact. Gives a tough chromium-carbide surface up to 58 Rockwell C that shrugs off the effects of grinding sand, gravel, grit and resists corrosive elements.

*For detailed information on how to get longer equipment life at lowest cost write for Bulletin SB-1352.*

*The World's Largest Manufacturer  
of Arc Welding Equipment*

**THE LINCOLN ELECTRIC COMPANY • DEPT. 5323 • CLEVELAND 17, OHIO**  
For more facts, use Request Card at page 18 and circle No. 356

Select	St	Select object
Grasp*	G	Grasp object
Transport loaded*	TL	Move object
Position*	P	Position for assembly
Assemble	A	Assemble parts
Use*	U	Use of tool
Disassemble	DA	Separating units
Inspect	I	Test unit
Pre-position*	PP	Position unit for grasping
Release load*	RL	Let go of object
Transport empty	TE	Move hand to unit
Rest	R	Worker rests
Unavoidable delay	UD	Delay beyond control of worker
Avoidable delay	AD	Worker responsible for delay
Plan	PN	How to proceed with work
Hold*	H	Hold unit

Figure 2.

(Continued from preceding page)

in the same place. However, there are also many places where the system can be applied to mobile jobs—laying finish floors, erecting wall board, and fitting locks—to create a standard method of the highest efficiency.

The second principle is to have tools and materials located close by and directly in front of the workman, in order to be within easy reach of his hands. Transport distances should be as short as possible, and movements should be as few as possible.

A person works in areas which are arcs of circles. In the horizontal plane there is a definite area in which the worker gets the greatest production with the least effort. This area is an arc drawn with a sweep of the hand across the bench or work place. The areas in which the bench workman gets the greatest production are determined by extending the forearm, the upper arm hanging at the side of the body until it tends to swing away as the hands move forward to the outer part of the work place.

The maximum working area is determined by the sweep of the arm across the work place, with the arm pivoted at the shoulder. The overlap-

ping arc constitutes a zone in which two-handed work may be done most conveniently.

This data can also be applied to non-bench operations. A bricklayer working on a swing scaffold has limited work space. The mortar box and brick storage must be within easy reach to permit the simultaneous use of both hands to make greater production possible.

On the horizontal scale, the bricklayer should confine his work space, for the greatest efficiency, to a 59-inch length of wall, the adjacent workmen picking up at those limits. In order to work to the best advantage, the bricklayers should be spaced along the wall at distances not much greater than five feet.

Similar space limitations regulate

working distances in the vertical plane, since there is a maximum distance beyond which work cannot be done without disturbing the natural body balance and posture. If these basic position limitations are given full consideration when providing scaffolds and work platforms on all outside work, the result is bound to be beneficial productionwise.

#### Other principles

The remaining eight principles of motion economy are self-explanatory. There should be a definite fixed place for all tools and materials so that the worker can grasp them when needed, automatically and without mental direction.

Gravity feed bins and containers should be used to deliver materials

**"DRILLED MORE THAN 100 HOLES in Hard Concrete WITHOUT RESHARPENING" (\*)**

**IMPOSSIBLE with steel star drills! ROUTINE with the NEW ENGLAND**

**Thunder-twist®**

**Carbide-Tipped MASONRY BITS**

Most economical bit you can use in any electric or pneumatic hammer! Drills in any masonry from brick to granite. Does the work of 16 star drills. And it's a one-man operation! Exclusive combination of vertical and spiral flutes provides positive dust removal... no packing, stalling, or binding. Tops in economy and efficiency on every job. Sizes: 3/16" to 1 1/2" diameter. Extended lengths up to 18". Send for free drilling manual.

Other New England Carbide-Tipped Bits Include:

**Cyclo-twist®**

Bits for rotary drilling of ordinary masonry.

**Cyclo-Core®**

Multi-Tipped Bits for rotary drilling of hard masonry.



Designed, Engineered, and Proven for the Job.

(\*) Write for proof of performance



Send for Free Drilling Manual and Start Using Today's Most Economical Masonry Bits

Please send me a copy of the "WHAT and HOW" Masonry Drilling Manual.

Name.....  
Address.....  
City.....State.....

For more facts, use coupon or circle No. 357

## JERSEY SPREADERS



**... World's fastest accurate paving Spreaders!**

Lay a smooth, even spread at the rate of up to 1000 tons per hour—and do it easily and economically, fast and accurately without delay to hauling units. Two models available to meet all requirements.

Write now for complete information and illustrated literature.

REG. TRADE MARK

**TRACTOR SPREADER COMPANY**

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY

For more facts, use Request Card at page 18 and circle No. 358

38-29



## TRUCO® DOES IT AGAIN!!!

**KING SIZE HOLES in 30" reinforced concrete footing drilled with TRUCO MACHINE and TRUCO DIAMOND BITS**

**JOB:** Cut 87 holes 3" diameter around three 30" diameter circles through 30" reinforced concrete footing of a 50' retaining wall; holes to be cut without impact or vibration which might shatter concrete, break bond of concrete to 1 1/4" steel rods, or cause spalling which would expose reinforcement. Purpose of the holes was to permit pouring of three 24" diameter by 46' friction piles to support a reinforced concrete plate upon which would be erected a 70' concrete and ceramic pylon weighing 200 tons.

**PROJECT:** Fort Moore Pioneer Memorial, Los Angeles.

**CONTRACTOR:** John L. Meek Construction Co. Inc., L. A.

**TOOLS:** Truco Model B Portable Diamond Drilling Machine, 750 rpm motor, 3" O.D. Truco Diamond Drill Bits.

**OPERATION:** Truco machine was set up and anchored to bolts in footing so it could be rotated in a circle. Anchoring provided leverage for fast cutting. Drilling 29 overlapping holes around a circle provided a 30" diameter hole with a 27" core weighing over a ton. Bits pierced concrete and steel without difficulty. Each 30" x 30" hole was completed in 29 hours. Nine Truco bits were used.

Write or phone for nearest distributor's name.

**TRUCO MASONRY DRILLING DIVISION  
WHEEL TRUEING TOOL COMPANY**

51-3200 W. Davison Ave. • Detroit 38, Michigan

Visit our booth at the P.W.C. and E. Show • Sept. 28-Oct. 1 • Kansas City

For more facts, use Request Card at page 18 and circle No. 359



Man	Machine
1. Pick up piece, place in a jig, clamp, lower drill and throw in feed. (GET READY)	IDLE
IDLE	2. Drill $\frac{1}{8}$ " hole in piece. Time 2.5 minutes. (DO)
3. Raise drill, remove piece, dispose, Blow chips out of jig. Time $\frac{3}{4}$ minute. (CLEANUP OR PUT AWAY)	IDLE.

Figure 3.

	Man	Machine
Idle Time	2.50 minutes.	1.25 minutes.
Working Time	1.25 minutes.	2.50 minutes.
Total Cycle Time	3.75 minutes.	3.75 minutes.
Utilization in percent.	Operator Utilization $\frac{1.25}{3.75}=33\%$	Machine Utilization $\frac{2.50}{3.75}=67\%$

Geo. E. Duthie & Son  
MAN AND MACHINE CHART

DATE 8/10/52 CHART NO. 819

SUBJECT Load earth from embankment LOCATION Baltimore

CONT NO. 1780 CODE 1 CHARTED BY R. G. D. MACHINE NO. 5-167 RATE \$18.

OPERATOR Chas. Jones RATE \$2.75 HELPER/Truck 3 yards RATE \$3.39

MACH. DESCRIPTION Kohring Model F on crawler CAP 3 1/2

OPERATION Load up embankment, 2 yard dump, 2 foot face, 100' section away

OLD METHOD X NEW METHOD \_\_\_\_\_ PROPOSED \_\_\_\_\_ UNIT S.Y. PART \_\_\_\_\_ COST \_\_\_\_\_

#	OPERATOR	TIME	<del>MACHINE</del> TRUCK	TIME	MACHINE	TIME
1	Run machine	1.5	Idle	1.5	Load truck	1.5
2	Idle	2.5	Truck moves out	2.5		2.5
3	Run machine	3.0	Empty truck moves in	3.0	Load truck	3.0
4	Run machine	3.5	Truck moves out	1.0		
5	Run machine	1.5	Empty truck moves in	2.5	Move ahead in cut	3.5
6	Run machine	1.5	Idle	1.5	Load truck	1.5
			Truck moves out			
			Empty truck moves in			

Figure 4.

close to the point of use.

Tools and materials should be pre-positioned wherever possible.

Drop deliveries—delivery of finished units by gravity to their destination—should be used wherever possible.

Hands should be relieved of all work that can be done advantageously by the feet. Foot-operated drill presses, soldering irons, bench vises should be used to release the hands for productive work.

Power-operated tools and equipment should be used wherever economical, and tools and materials should be located to permit the best sequence of motions.

Smooth continuous motions of the hands are preferable to zigzag motions or straight-line motions involving sharp changes in direction.

The height of the work place should preferably be arranged to permit alternate sitting and standing at work. Adequate lighting should be provided and the workman made as comfortable as possible.

#### Men, machine charts

Work simplification through the use of process charts, gang process charts, and time and motion studies can be applied to both men and machines, particularly where the operator and the machine work intermittently. The operator works while the machine is being loaded and sometimes when the load or finished product is being removed; the operator is idle while the machine is working.

A hoist tower, for instance, is idle while being loaded and unloaded, and the loaders and unloaders are idle when the hoist is going up and down. It is vital that idle time for the man or men be eliminated, and that the working time for the machine be at the maximum.

The way to improve operations is first to record and make an analysis of when man and machine work, and what each does. By doing so we can discover who is at fault—man, machine, or both. If the man is at fault, a time and motion study discovers the reason and points to corrective steps. A man and machine chart shows the deficiencies of both.

Man and machine operations con-  
(Continued on next page)

## MAKE BIG MONEY IN PAVING!

### NEW LOW COST ALL-PURPOSE ROLLER LETS YOU START WITH SMALL INVESTMENT

Cash in on the tremendous demand in the paving field. The General all-purpose, heavy duty, power operated roller lets you pave asphalt driveways and walks, parking lots, service stations. Roll lawns, tennis courts, playgrounds, parks and municipal properties. The General all-purpose roller is time tested and job proven — built to take a beating and withstand years of rugged service. Features a new automatic transmission with full reverse to give complete maneuverability in tight spaces. Simple, foolproof, adjustable weight control lets you roll anything from blacktop driveways to highways with equal ease. Exclusive fingertip operation of all controls on a single lever — brake, transmission and throttle. High curb clearance allows precision rolling close to buildings and obstructions. Hinged hood permits ready accessibility to automatic transmission and engine for easy service and maintenance. General machines now in use the world over testify to their durability, efficiency, economy, and trouble-free operation. Write or call for full information.

#### WORKS ALL YEAR 'ROUND ON MANY DIFFERENT JOBS

A roller lets you take jobs all year 'round. Customers are everywhere — home owners, landscapers, municipal governments. Has all the features found in rollers costing twice as much: Oversized water tank with individual controls both with compression and guide roll — with dual scrapers and large cocoa mats. A real professional contractor's roller that enables you to take ANY JOB. Write or call for full information.

**DEALERS!**  
WRITE - WIRE - PHONE  
**Mr. McCaughey**  
Choice Territories Still Open  
Tilden 5-5401



**ONLY \$995**  
fab factory

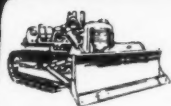
#### LOOK AT ALL THESE FEATURES

Rolls full 32". Fully automatic reversing transmission. Ruggedly constructed. Heavy duty front forks made of  $\frac{1}{2}$ " plate. Main frame  $\frac{3}{8}$ " plate. Maximum weight over 2000 lbs. Oversize water tank at no extra cost. Cocoa mats and scrapers both rolls included.

**GENERAL ENGINES CO.** ROUTE 130, THOROFARE, N. J. • CALL TILDEN 5-5401

For more facts, use Request Card at page 18 and circle No. 360

## Attention CONTRACTORS



train your  
heavy equipment  
Mechanics and  
Operators at Greer

## MECHANICS training

Complete mechanics training of diesel engine transmissions; torque converters; fuel injection systems; track assemblies; final drive assemblies; steering systems; idlers; rollers; power transfer systems; cable control systems; hydraulic control cylinders & welding pertaining to heavy earth moving equipment such as bulldozers, scrapers, loaders, off highway trucks, etc. Course time—540 hours—10 weeks.



## OPERATORS training

Course teaches road building, land clearing, grading, excavating on crawler tractors, front end loaders and scrapers, etc., including preventive maintenance. 200 hours—4 weeks. Motor graders and compactors, including preventive maintenance. 200 hours—4 weeks. Backhoe and dragline, including preventive maintenance. 200 hours—4 weeks.

SPECIAL WEEK-END TRAINING AVAILABLE  
Write Mr. C. I. HUTCH



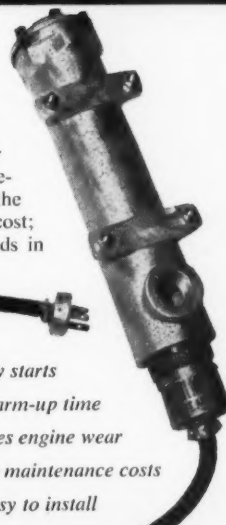
**Greer TECHNICAL INSTITUTE**  
BOX 278, BRAIDWOOD, ILL.

For more facts, circle No. 361

## KIM Hotstart electric pre-heater

for Diesel Engines

KIM HOTSTART pre-heaters circulate hot water through engines when they are not in use; protect them against bitter winter weather; keeps engines responsive to the touch of the starter. Lightweight; low cost; high in savings. Thousands in use.

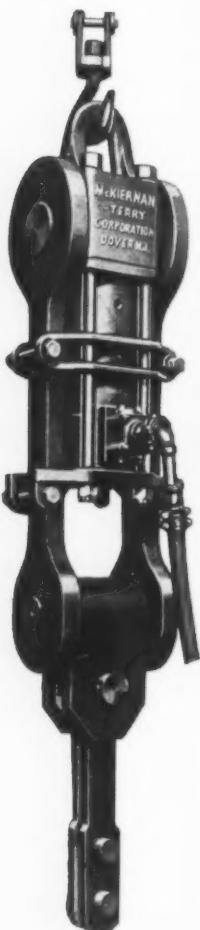


- ★ Quick easy starts
- ★ Saves warm-up time
- ★ Reduces engine wear
- ★ Cuts maintenance costs
- ★ Easy to install

Write for literature.

**KIM HOTSTART MANUFACTURING COMPANY**  
West 917 Broadway, Spokane 1, Washington  
For more facts, circle No. 362

**McKIERNAN-TERRY CORP.**  
82 RICHARDS AVE., DOVER, N. J.



## PILE EXTRACTORS

Models E2 and E4, rated for 50- and 100-ton crane pull respectively, provide rapid, low cost extraction of heavy piles from the toughest embedment. Powered by steam or air. Write for Bulletin 58.

For more facts, circle No. 363

construction camera



Dirt moving on the first interstate project in Mississippi gets started with Euclid TS-24 twin-power scrapers making hauls. An Allis-Chalmers HD-21 is helping to push-load one of the rigs. Altogether, there are six of these scrapers on the U. S. 51 project near the Tennessee state line.



Structural steel is set by an American crane for the new million-dollar headquarters of the Gibraltar Savings and Loan Association in Beverly Hills, Calif. McNeil Construction Co., Los Angeles, is the contractor for the 48,000-square-foot building.

(Continued from preceding page)

sist of three main steps: getting ready, such as putting sand, cement, and stone in a paver; doing the work, such as mixing the materials to make concrete; and putting away, or discharging the concrete from the drum.

Usually, a clearer picture of the relationship among these steps can be obtained from a chart, Figure 3. In this case, man and machine required 3.75 minutes to drill a hole in a casting. During this time the operator

worked 1 1/4 minutes and the machine was in operation 2 1/2 minutes. The operator's working time covered 33 per cent of the cycle, and the machine's working time accounted for 67 per cent of the cycle. A way to improve production here is to use two drill presses, the operator making the setup on the second machine while the first is drilling the hole.

A more detailed man and machine chart, Figure 4, contains the

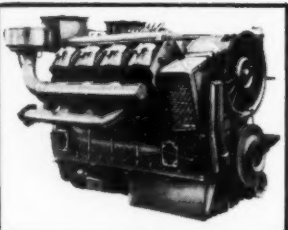
## TERRAPAC'S 1600 vibrations a minute...a breeze for DEUTZ AIRCOOLED DIESELS



Deutz Model A 2 L 514-2 cyl., 162 cu.in.

8,000,000 yards of sand fill were compacted at Griffith Air Force Base in Rome, N. Y. with 12 Vibro-Plus vibratory rollers. Only Terrapacs hit better than 100% density. Terrapacs proved their ability to do the job better with fewer passes, at less cost per yard.

Working 20 hours a day, the contractor ran Deutz Aircooled Diesels in compaction tests. Deutz Diesels have since been mounted on all the units. Deutz' reliability, reduced downtime and the quick availability of parts played an important part in the selection. Naturally, Deutz Aircooled Diesels eliminate all the usual problems connected with liquid-cooling—no radiators to break down, no hose connections and water pumps to spring leaks. Deutz Aircooled Diesels were also selected for their top operating efficiency at temperatures of up to 140°F. You'll find DEUTZ powering graders, earth-movers, shovels, concrete mixers and generator sets...doing construction's toughest job everywhere.



Deutz Model A 8L 614-8 cyl.

Send for free information on  
**AIRCOOLED DEUTZ DIESELS**  
from 5 to 250 HP in  
1, 2, 3, 4, 6, 8 and  
12 cylinder models.

**DIESEL ENERGY CORPORATION**  
82 BEAVER ST., NEW YORK 5, N. Y.



**DIESEL ENERGY CORPORATION CE-2**  
82 Beaver Street, New York 5, N. Y.

I am interested in more details on use of the  
DEUTZ AIRCOOLED DIESEL for the following purposes:

☐ INDUSTRIAL ☐ CONSTRUCTION ☐ DEALER  
☐ OPERATOR

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon, or Request Card at page 18 and circle No. 364

## LOWEST PRICED BIG DITCHER ON THE MARKET!



### VERMEER 524T Pow-R-Ditcher

Acclaimed by contractors everywhere, the 524T delivers more ditch at a much lower dollar cost. This rugged, quality-built unit is especially designed for wide foundation footings, gas, water and sewage lines. Digs 8" to 24" wide at speeds up to 15' per minute. Handles most ditch-digging jobs at a fraction of the cost of larger, more expensive trenching and ditching machines.

### Model 4T Pow-R-Ditcher

Has same size moving parts as the 524T but digs smaller 6" to 14" ditch. Ideal for the light construction field.

Write For Literature and Low  
Prices on the Complete  
Vermeer Pow-R-Ditcher Line

Another smaller Pow-R-Ditcher also available. Visit your Vermeer dealer for a demonstration or write for all the facts. Check the Pow-R-Ditcher before you buy. You'll like the quality AND THE PRICE!

**VERMEER  
MANUFACTURING CO.**

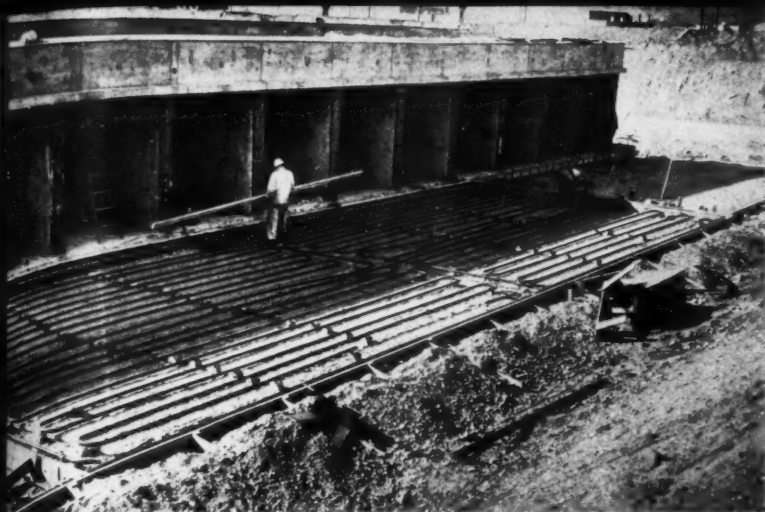
1437 W. WASHINGTON • PELLA, IOWA

For more facts, circle No. 365

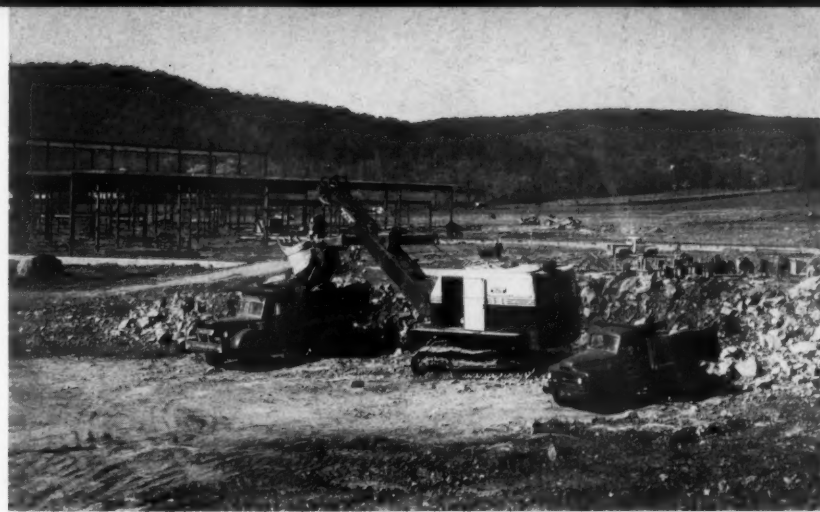
CONTRACTORS AND ENGINEERS



dollar  
everly  
for the



In the new state of Alaska, where the emphasis is on defense construction, an ammunition dump is being rushed to completion for the Air Force. The wrought-iron snow-melting system, supplied by A. M. Byers, will be encased in the concrete apron at the front of the structure.



More industries moving to the suburbs means more industrial construction. At this new factory site at Hackettstown, N. J., where 27,000 cubic yards of blasted rock and earth has to be removed, the loading-out operation is done by a Bucyrus-Erie 51-B. The P. T. & L. Construction Co., Inc., Paramus, is handling the job.

fundamentals of the previous example, but the makeup of the chart has been enlarged to include more data. A third factor has been added, a helper or truck. This enables one to chart the work of a shovel operator, shovel, and truck serving a shovel.

Additional columns should be added to take care of additional machines, operators, and helpers. Although this chart shows the time in minutes, it could be changed to seconds, if necessary.

#### Shovel analysis

This example, Figure 4, is a record of a power shovel loading out 3-yard trucks from an embankment with a maximum 5-foot face. The operator and machine activities have been plotted for 33 minutes. During the period checked, the operator was working 77 per cent of the time; the trucks, 33 per cent; and the shovel, 47 per cent.

The major causes for this low shovel production were delays in transportation, checking grade, and

adjusting the main clutch. Over the period of the full shift, these delays might be minimized by spreading them over a longer period until the shovel efficiency increased to 75 or 80 per cent.

#### Analyzing motions

A detailed analysis of Figure 4 shows that the loading time varies from 1.5 to 3.5 minutes—an average of 2.5 minutes. The total digging cycle for one dipper load should not exceed 7 seconds in this earth, and the swing and return should not exceed 12 seconds. This provides a total of 19 seconds for the complete cycle. With five dipper loads per 3-yard truck, the total should be 95 seconds, or 1.5 minutes.

The loading time as charted is much too slow, and time is being lost. A time and motion study will develop the reasons for this.

The chart records that it takes from 1 to 2½ minutes for trucks to move in

(Continued on next page)

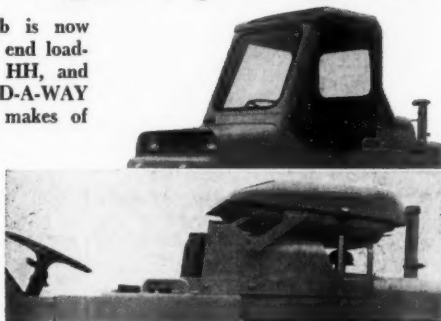
## The NEW FOLD-A-WAY INDUSTRIAL CAB

**UP or DOWN in Seconds**



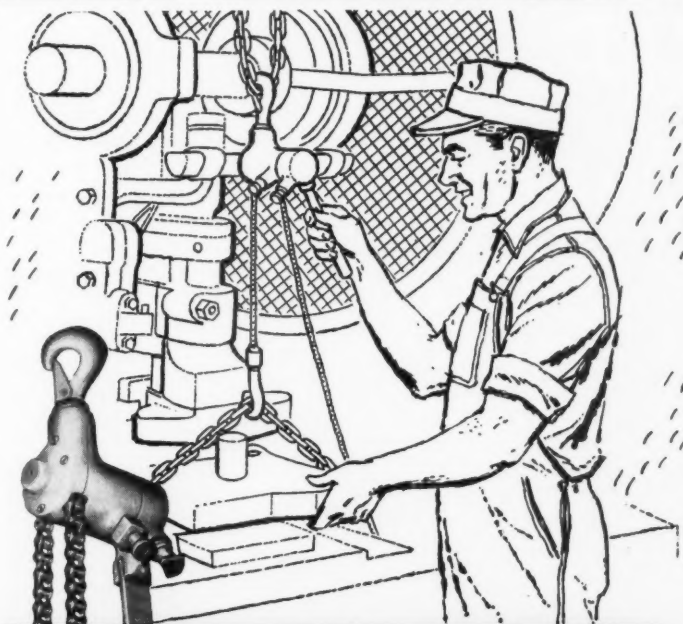
The NEW FOLD-A-WAY cab is now available on all Michigan front end loaders. Also Hough Models HO, HH, and HU. In the near future FOLD-A-WAY cabs will be available for all makes of front end loaders.

Industrial Cabs are available in all models of fully enclosed, semi-enclosed or canopy type for all makes and models of construction equipment. Order your Industrial Cabs from your favorite equipment distributor.



**INDUSTRIAL CAB COMPANY**  
36 Jefferson Avenue, Salem, Mass. Phone Pioneer 4-3959

For more facts, use Request Card at page 18 and circle No. 366



**STRONG, COMPACT AND LIGHTWEIGHT**

## The Coffing Mighty Midget Puller

Compact and lightweight, the Coffing Mighty Midget Pullers are handy lifting tools for all types of industries. The 1000 lb. capacity model weighs but 9½ lbs. and requires only 40 lbs. of handle pull. The 500 lb. model weighs 6½ lbs. and requires only a 28 lb. pull for full rated capacity.

The handle can be operated as a crank for fast lifting, or it can be used as a lever for short pulls, or for working in cramped quarters. Should the puller be overloaded, the "safety valve" handle will give before any load bearing part fails.

For full information on this compact, light and inexpensive lifting tool, consult your Coffing distributor, or write for Bulletin MP.

## COFFING HOIST

DIVISION OF  
**DUFF-NORTON COMPANY**  
810 Walter Street • Danville, Illinois

**COFFING HOISTS**

Ratchet Lever  
Hand Chain, Electric



**DUFF-NORTON JACKS**

Ratchet, Screw,  
Hydraulic, Worm Gear

For more facts, use Request Card at page 18 and circle No. 367



One of the last phases of work on the relocation of U. S. 16 in Clinton and Ionia counties, Michigan, is the sawing of longitudinal joints. The Canonie Construction Co., South Haven, Mich., subcontractor on the sawing work, uses an Eveready Model E-36 saw to cut the green concrete.



Backfill is unloaded by a Model HU Payloader during work on a new building for Harbison-Walker Refractories Co. at Portsmouth, Ohio. The Payloader is also being used to move material and transport ready-mix concrete for the contractor, Consolidated Construction Co., Inc., Baltimore.

## WHY BURY MONEY IN NEEDLESS STREET PATCHES?

GREENLEE Hydraulic Pipe Pushers like the one shown below quickly install pipe under streets with a minimum of ditching and backfilling and no damage to roadbeds or pavement! A GREENLEE Pipe Pusher cuts job time and costs to a fraction. Can pay for itself on the first job—usually does on the first few jobs. Model shown pushes 3/4" to 4" pipe about 2 ft per minute with power pump. Larger unit available for larger pipe and concrete sewers. Instead of another useless street repair job, invest the same money in a valuable time-saving, worksaving GREENLEE Pipe Pusher! Write today for free literature.



**GREENLEE TOOL CO.**  
2269 Columbia Avenue  
Rockford, Illinois  
For more facts, circle No. 368

(Continued from preceding page)

and out under the dipper. This is too slow and must be speeded up. A loss of 5 minutes in checking the grade is not justified. The foreman or other supervisor should see to it that the grade is checked without losing time.

A 2-minute loss of time because trucks are not available is too much. A 5-minute loss for machine repairs requires immediate attention.

This example shows how the man and machine charts can be employed to check the productivity and efficiency of any man-machine operation, such as mixing concrete, or pile driving.

### Recording distances

The standard man and machine chart can be altered easily to record the distances a machine moves with its load. The activities of the operator

and the machine—treating a tractor and scraper, for instance, as one unit—are noted in a man and mobile machine chart. There is space to record the distance the machine moves; space for recording the nature of the ground and the grade; and other data necessary to properly evaluate production. Also noted is the nature of the material, since this will regulate the time taken in loading.

Several sheets are needed to record a full shift operation, with the summary on the last sheet only.

With a man and mobile machine chart, it is possible to summarize the analysis in a cost per cubic yard. Operations should be checked over several full shifts before reaching any conclusions.

(Next month's article will deal with "Planning and production: Factors affecting earthmoving production.")

The Arizona Highway Department will build 43.5 miles of Highway 80, between Tucson and Benson, bringing it up to Interstate standards. Work will be completed in the 1963 construction season.

## acker LD core drills

"ALWAYS GET THEIR CORES!"



Acker's low-cost LD Core Drill was specifically designed for sensitive, hand lever feed drilling to permit even unskilled operators to recover core from broken difficult formations.

Even so, we were particularly gratified to learn from the Boring Soils & Testing Co., that their Acker LD Rig successfully obtained cores from extremely difficult coral rock

formations in Bermuda. This, despite the failure of other rigs to obtain cores!

The LD is completely self-contained and is available for jeep, trailer, truck or skid mounting. It makes diamond core drilling possible even in the roughest terrain!

If you want more information about the Acker LD, please write for Bulletin 21C&E.

**ACKER DRILL CO., Inc.**  
P.O. BOX 830 • SCRANTON, PA.

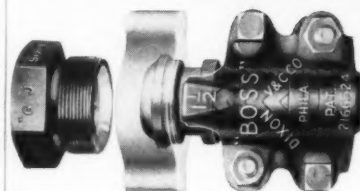
Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

For more facts, use Request Card at page 18 and circle No. 369

*Safest Connections  
for Pile Driver Hose*  
AND OTHER STEAM, AIR, WATER  
AND HYDRAULIC APPLICATIONS

## "GJ-BOSS"

GROUND-JOINT  
FEMALE  
COUPLING  
STYLE X-34



The original washerless coupling that is unequalled for safety in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal...no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

COMPANION  
MALE COUPLING  
"BOSS", STYLE MX-16



Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose...oversize hose not required. Coupling consists of I.P.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes 1/4" to 6", inclusive.

Stocked by Manufacturers and Distributors  
of Mechanical Rubber Goods

**DIXON**  
Valve & Coupling Co.  
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.  
BRANCHES—CHICAGO • BIRMINGHAM • LOS ANGELES • HOUSTON  
DIXON VALVE & COUPLING CO. LTD. TORONTO Associate Companies:  
Rockwell Company, Inc. Baltimore, Md. • Phoenix Brass & Steel Company, Canton, N.Y.

For more facts, circle No. 370  
CONTRACTORS AND ENGINEERS





Work on the Mississippi River Bridge between New Orleans and Algiers, La., progresses swiftly as 26 x 7½-foot deck sections are set by an Austin-Western hydraulic crane. About 126,000 square feet of steel decking, fabricated by the Equipment Division of Blaw-Knox, is being used.



Another dump by an International 75 Payscraper adds to the amount of fill being placed at the site of a new sewage treatment plant for Odgen, Utah. Located ten miles west of the city, the job requires 500,000 cubic yards of borrow material as fill at the new plant site.

### CIMA increases services to member companies

The board of directors of the Construction Industry Manufacturers Association has approved increased services to its member companies. This makes possible the formation of bureaus within the association framework, wherein member companies who manufacture similar equipment may join together as product groups. They may then formulate programs to promote the use of their products.

discuss mutual problems, report business statistics, etc.

The numerous council activities under CIMA sponsorship will not be changed. Councils differ from the bureaus in that they embrace all members of the association, regardless of the type of equipment they manufacture, and are concerned with over-all industry problems, rather than with those of individual products.



### Quick way to measure 90,000 gallons

Given a tight suction line and 10 ft. static lift, a 90M Rating Plate on a new pump guarantees that you can pump at least 90,000 gph (1500 gpm) against a 25 ft. head. Capacity at higher lifts and heads is certified by the same standards.

For pumps from as small as 4000 gph to as large as 125,000 gph, AGC standards and Rating Plates give you this needed information and guarantee its correctness. In addition, AGC standards guarantee ample engine power and up-to-date design to assure you of satisfactory service from any rated pump.



To maintain these helpful standards, demand the AGC Rating Plate on any pump you buy.

Demand this Rating Plate for your protection.

#### CONTRACTORS PUMP BUREAU

Affiliated with The Associated General Contractors of America  
Munsey Building, Washington 4, D. C.

BARNES MFG. CO.  
Mansfield, Ohio

C. H. & E. MFG. CO.  
Milwaukee 12, Wisc.

CARVER PUMP CO.  
Muscatine, Iowa

CHAIN BELT CO.  
Milwaukee 1, Wisc.

CONSTRUCTION MCHY. CO.  
Waterloo, Iowa

ESSICK MFG. CO.  
Los Angeles, Calif.

PEERLESS PUMP DIVISION  
Food Machinery & Chemical Corp.  
Los Angeles 31, California

THE GORMAN-RUPP CO.  
Mansfield, Ohio

THE JAEGER MACHINE CO.  
Columbus, Ohio

JACUZZI BROS., INC.  
Richmond, Calif.

MARLOW PUMPS  
Div. of Bell & Gossett Co.  
Midland Park, N. J.

McGOWAN PUMP DIVISION  
Leyman Mfg. Co., Cincinnati 2, Ohio

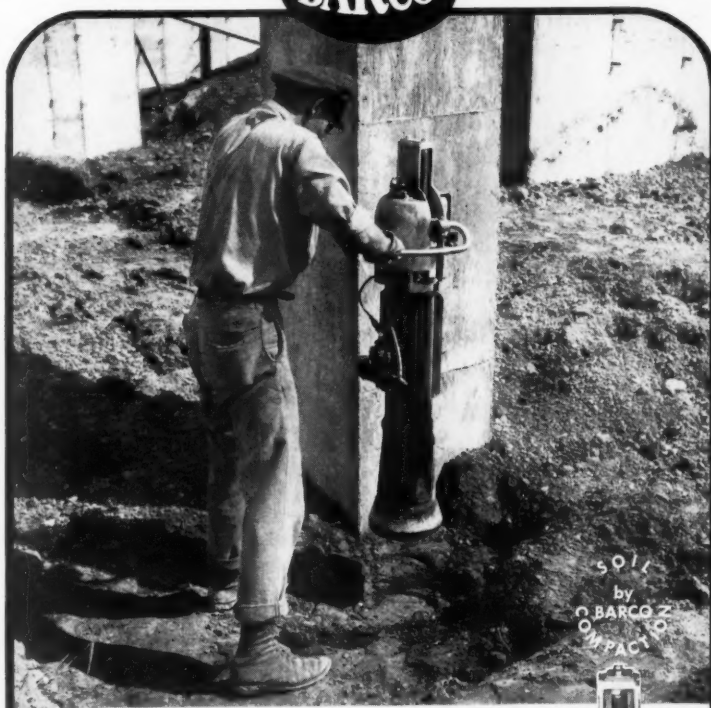
RICE PUMP & MACH. CO.  
Belgium, Wisc.

STERLING MACHY. CO.  
Los Angeles, Calif.

WORTHINGTON CORPORATION, Contractor's Pump Division, Plainfield, N. J.



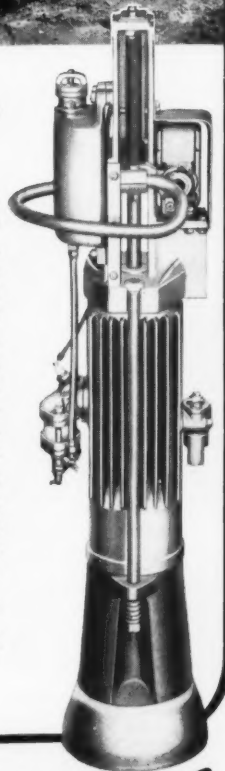
### GASOLINE BARCO RAMMER



### Barco Performance Pays Dividends!

**Job Finished on Time!**—When project specifications call for SOIL COMPACTION, Barco performance can't be beat! In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—RAPIDLY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Atomic Energy, Air Bases, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Bridges, Buildings, and Housing Developments. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

**Ask for a Demonstration!**—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.



**BARCO Manufacturing Co.**

518K Hough Street

Barrington, Illinois

For more facts, use Request Card at page 18 and circle No. 372

For more facts, use Request Card at page 18 and circle No. 371

## Distributor doings

### Johnson appoints dealer

C. S. Johnson Co., Champaign, Ill., subsidiary of Koehring Co., has appointed Wilson Equipment & Supply Co., Cheyenne, Wyo., a distributor for that state. Wilson Equipment will carry one, two, and three-stop automatic concrete batch plants for airport and highway paving; concentric batchers; transit-mix plants; elevating chargers; batch recording systems; portable batch plants on wheels; and clamshell buckets.

### Hoffman Brothers awards drill-bits franchise

Law Engineering Testing Co., Atlanta, Ga., has been appointed Southeastern distributor for oriented diamond drill bits manufactured by Hoffman Brothers Drilling Co., Punxsatawney, Pa. The new technique of "orientation" of diamonds is said to extend the life of a drill bit by reducing diamond breakage.

### P&H appoints new dealers

Drott Tractor Co., Inc., Milwaukee, has been appointed to represent the full line of P&H power cranes and shovels manufactured by Harnischfeger Corp., also of Milwaukee. P&H sales, service, and parts will be pro-

vided by Drott in its home office and in its branches at Madison and Rice Lake, Wis., and Iron River, Mich.

Calavar Corp., 2700 S Broadway, Los Angeles, Calif., has been appointed a distributor for the P&H diesel engine division in Southern California and western Arizona.

### LeT-WesCo dealer makes personnel changes

Construction Service Equipment Co., of Omaha and North Platte, Nebr., has named Robert R. King as president and general manager to succeed James L. Paxton, Jr. At the same time, E. B. Christensen has been appointed vice president; and the duties of assistant secretary-treasurer William H. Tute now include

those of assistant general manager.

The dealer is a distributor of earthmoving, hauling, and grading equipment manufactured by the LeTourneau-Westinghouse Co., Peoria, Ill.

### Warner & Swasey appoints 23 new distributors

The Warner & Swasey Co., Cleveland, Ohio, has appointed 23 new distributors to handle the Gradall and Hopto lines of earthmoving machinery. The dealers are Aring Equipment Co., Inc., Milwaukee, Middleton, and Eau Claire, Wis.; M. L. Baxter, Ltd., Toronto, Ontario, Canada; Conte Equipment Corp., Pittsburgh, Pa.; Columbia Equipment Co., Portland, Ore., and Seattle and Spokane, Wash.; Equipment, Inc., Jackson, Miss.; J. C. Georg Construction Equipment, Inc., Syracuse, Schenectady, and Lisbon, N. Y.; Girard Machinery & Supply Co., San Antonio, Texas; Hedge & Mattheis Co., Boston, Auburn, and West Springfield, Mass.; East Providence, R. I.; West Haven and East Hartford, Conn.; and Burlington and Rutland, Vt.; and Hi-Way Equipment Co., Inc., Houston, Texas.

Also included are Hi-Way Machinery Co., Dallas, Texas; Korte Bros., Inc., Fort Wayne and South Bend, Ind.; E. H. Kliebenstein Co., Ridgefield, N. J.; and John C. Louis, Co., Inc., Baltimore, Md., and Washington, D. C.; Marks Tractor & Equipment Co., Cleveland, Canton, Maumee, and Youngstown, Ohio; The Rayall Co., North Miami, Fla.; Road Machinery & Supplies Co., Minneapolis and Duluth, Minn.; Service Supply Corp., Philadelphia and Lancaster, Pa.; Telford Equipment Co. of Detroit, Inc., Detroit, Mich.; White Star Machinery & Supply Co., Wichita, Kans.; Western Construction Equipment Co., Billings and Great Falls, Mont.; West Virginia Mine Supply Co., Clarksburg, W. Va.; Liberty Trucks & Parts Co., Denver, Colo.; and Power Equipment Co., Knoxville, Nashville, Kingsport, and Chattanooga, Tenn.

## Maintain traffic while laying shoulder material and back-filling



### POWER-PACK is a multi-purpose machine that gets jobs done fast

There's no need to stop or delay traffic when you use POWER-PACK for back-filling and shoulder work. Its working width of less than 12' permits you to maintain traffic without slowing down your work. Contractors, state and county highway crews have found POWER-PACK also speeds up jobs and pays for itself in one season.

- Conveyor quickly changed for right or left discharge
- Spreads sand, stone or hot mix
- Minimizes manual clean-up
- Requires only one operator
- Frees larger equipment for other work

Send for complete details now!



**POWER-PACK CONVEYOR CO.**

836 E. 140th St. - Glenview 1-7670 - CLEVELAND 10, OHIO

Conveyor Specialists since 1929



Model 600 for backfilling to 4' from pavement



Model 605 for shoulder work up to 5' from pavement



Model 610 for backfilling to 8' beyond truck

For more facts, use Request Card at page 18 and circle No. 373

## Save Time and Money



### WITH MOBILE OFFICE UNITS

Mobile office units are always ready to go to work for you wherever the job—no shack to erect and then tear down—no time lost in looking for records, blueprints, etc. Everything is at your fingertips—where you want it, when you want it.

Mobile Office units are built for years of rugged use. Mobile Office units offer ideal facilities for Offices, Drafting Rooms, Paymasters, Timekeepers, Engineers and many other uses conforming to the contractor's particular needs.

Write today and get the complete facts on how Mobile Office units can work for you.

**MOBILE OFFICE INCORPORATED**  
7300 Stony Island Avenue, Chicago 49, Illinois  
Phones DOchester 3-1048-9

For more facts, circle No. 374

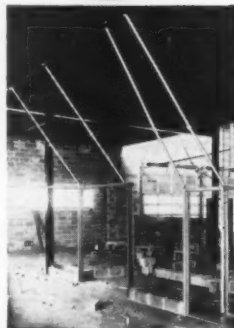
## INDISPENSABLE



when setting  
**METAL DOOR FRAMES**

**SINCLAIR**  
All-Metal  
Adjustable

## BUCK-UPS



Indispensable . . . if you want to attain fantastic savings in the cost of setting metal door and window frames BUCK-UPS end—once and for all—measuring, cutting, fitting, bracing and nailing wooden bucks to metal frames. Accurate settings from any angle, in any position, are accomplished in minutes. BUCK-UPS are made of cadmium plated, tubular steel; adjustable up to 15' ceilings; reusable from job to job, year after year.

**INEXPENSIVE! WRITE FOR PRICES!**  
Dealer inquiries invited  
**SINCLAIR INDUSTRIES, INC.**

1317 Kentucky Avenue • St. Louis 10, Missouri, U.S.A.  
For more facts, circle No. 386

### Howell Tractor moves to new Illinois offices

A new building in Centex Industrial Park, Elk Grove, Ill., is now the headquarters of Howell Tractor & Equipment Co. The site covers an area of 170,000 square feet, with enclosed space of 25,560 square feet and 9,240 square feet of concrete apron area for shipping space and outdoor work room in good weather. Service and repair departments will use 10,560 feet of the enclosed portion.

Formerly located at 7443 Racine

### MANUFACTURERS' AGENTS WANTED

Established, well-known manufacturer combustion equipment has open sales areas for representatives regularly calling on asphalt paving contractors. Engineering background or practical experience in asphalt plant operation required. Drawing account for limited period against sales commissions.

Write Box 511, Contractors and Engineers, 470 4th Ave., New York 16, N. Y.

CONTRACTORS AND ENGINEERS



Ave., Chicago, Howell Tractor is the midwest regional distributor for International Harvester, Drott, and Gallon. The firm has branches at Rockford, Ill., and Gary, Ind.

#### Two new Trojan dealers

The Trojan Division of Yale & Towne Mfg. Co. at Batavia, N. Y., has appointed two new distributors for its Trojan tractor-shovel line. Pelican Machinery Co., Inc., 7300 Washington Ave., New Orleans, will cover the lower part of Louisiana; and W. F. Fuller Machinery Co., Ltd., 7th Ave. and Halifax St., Regina, Saskatchewan, Canada, will serve the entire province of Saskatchewan.

#### Oregon dealerships formed

C. J. Guthrie has established the Guthrie Machinery Co., 5816 N. E. Lombard, Portland, Ore., to handle the low-volume lines of equipment throughout the Northwest. The dealer carries Clary strikeoff screeds, Petroleum Heating electric heat for storage tanks, Concut concrete saws, Murphy welded steel truck scales, and Calweld magnesium rakes and lutes.

#### Changes in Canadian firm

J. P. Frost, founder of the 26-year-old firm of Frost Machinery Co. Ltd., Winnipeg, Manitoba, Canada, has retired from active business and has named his son, Douglas P. Frost, president and general manager of the company. R. A. W. Vidler has been appointed vice president in charge of sales and office management.

#### New Prime-Mover dealers

The Prime-Mover Co., Muscatine, Iowa, has appointed three new distributors for its lines of powered carts and fork-lift trucks for handling concrete, masonry materials, and building supplies. E. L. Lester & Co., 5050 Holmes Road, Houston, Texas, is the exclusive distributor for that city and 32 surrounding counties.

The San Antonio and Corpus Christi, Texas, areas will be covered by Girard Machinery & Supply Co., 3402 Roosevelt Ave., San Antonio. Colorado will be served by King & East Machinery Corp., 2050 Bryant St., Denver.

#### Georgia dealer for Euclid

Brooks Machinery, Inc., Marietta, Ga., has been appointed a dealer for the complete line of scrapers, rear and bottom-dump haulers, and crawler tractors manufactured by the Euclid Division, General Motors Corp., Cleveland. Brooks Machinery, which will cover northern Georgia, has represented Euclid in another area for several years, but has relinquished that territory.

#### Illinois dealer for B-L-H

Werckle Construction Equipment Co., Route 51 and 11th Street Road, Rockford, Ill., has been appointed a distributor for Lima Austin-Western crushing, screening, and washing equipment made by the Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio, to cover the northwestern part of the state.



# WBPCBP\*



The ROSS PORTA-PLANT TEAM . . . America's most imitated design . . . Eye appealing design, economical and easy operation are foremost in the perfect pair. Maximum performance, long life, low upkeep, high maneuverability, and quick job site set-up make this the World's Best Portable Concrete Batching Plant.

## HIGH PRODUCTION... AT LOW INITIAL COST

### INDEPENDENT BULK CEMENT BATCHING PLANT

Capacity: 220 bbls. and 350 bbls.

### 3½ and 6 YARD BATCH PLANT

\* World's Best Portable Concrete Batching Plant

Contact us for literature and the name of the dealer nearest you

## ROSS PORTA-PLANT

Brownwood, Texas

Box 446

Phone 2697

Exclusive Export Representative: P. J. Wolfson Co., Inc., 150 Broadway, New York 38, New York

For more facts, use Request Card at page 18 and circle No. 376



There's no paint on Lufkin Chrome Clad Anchor Tape lines.

The bold, black markings are bonded to the basic metal . . . protected with several electroplatings that give extra strength to the line. The final metal coat is Lufkin's

exclusive Chrome Clad finish. Glare free, smooth, rust resistant . . . the most durable tape line you can buy.

Anchor lines are replaceable in the genuine-leather, hand-stitched case. Available with markings in feet, 10ths and 100ths.



For more facts, use Request Card at page 18 and circle No. 375

### STOP that WATER

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample. HAYNES PRODUCTS CO., OMAHA 3, NEBR. With FORMULA No. 640

WANTED—DISCARDED PARTS  
CM51-71-110 Injector Parts

Connie

2093 East 19th Street  
Cleveland 15, Ohio

## INDEX TO ADVERTISERS

Acker Drill Co., Inc. ....	144
Alexander Mfg. Co. ....	6
Allis-Chalmers Mfg. Co. 64, 82, 83, Insert at page 96	
American Manganese Steel Div. ....	34
American Photocopy Equip. Co. Inserts at pages 34 and 116	
American Road Equip. Co. .	53
Associates Discount Corp. .	69
Atlas Copco ....	30
Austin-Western Constr. Equip Div., Baldwin-Lima- Hamilton Corp. ....	131
Baldwin-Lima-Hamilton Corp. ....	109

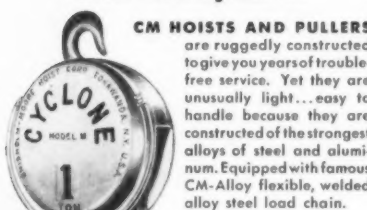
Barber-Greene Co. ....	80
Barco Mfg. Co. ....	145
Barnes Mfg. Co. ....	116
Bethlehem Steel Co. . 40, 41, 86	
Bil-Jax, Inc. ....	78
Black & Decker Mfg. Co. 95, 138	
Blaw-Knox Co. ....	37
Browning Mfg. Co. ....	136
Brunner & Lay, Inc. ....	149
Bucyrus-Erie Co. ....	50
Butler Bin Co. ....	119
Calweld, Inc. ....	133
Carver, Inc., Fred S. ....	136
Caterpillar Tractor Co. 7, 14, 22, 23	
Chisholm-Moore Hoist Div. 148	
C.I.T. Corp. ....	62, 63
Clark Equipment Co. . 4th Cover	
Clement-Braswell, Inc. ....	19
Cleveland Trencher Co. ....	96
Coffing Hoist Div., Duff- Norton Co. ....	143
Colorado Fuel & Iron Corp. 84, 125	
Concrete Surfacing Machy. Co. ....	120
Continental Motors Corp. .	125
Continental Rubber Works .	105
Contractors Pump Bureau .	145
Crutcher-Rolls-Cummings, Inc. ....	13
Dana Corp. ....	12
Diesel Energy Corp. ....	142
Dixon Valve & Coupling Co. 144	
Dorsey Trailers ....	78
Dudgeon, Inc., Richard ....	119
Eagle Iron Works ....	105
Earnest Machine Co. ....	127
Economy Forms Corp. ....	107
Eimco Corp. ....	15
Electronic Specialties Co. .	112
Ellis Mfg. Co., Inc. ....	134

Euclid Div., GMC ....	102, 103
Everhot Mfg. Co. ....	132
Food Machy. & Chemical Corp. ....	101
Ford Div., Ford Motor Co. .	112
Forney's, Inc. ....	94
Foster Co., L. B. ....	139
Fuller Mfg. Co. ....	129
Funk Mfg. Co. ....	113
Galion Iron Works & Mfg. Co. ....	85
Gar-Bro Mfg. Co. ....	79
Gardner-Denver Co. ....	108
Garrison Mfg. Co. ....	106
General Engines Co. ....	141
General Tire & Rubber Co. .	122
Goodrich Co., B. F. ....	44, 45
Goodyear Tire & Rubber Co. .	5
Greenlee Tool Co. ....	144
Greenville Steel Car Co. .	128
Greer Technical Institute .	141
Griffin Wellpoint Corp. .	116
Gulf Oil Corp. . Insert at page 72	
Hartford Mach. Screw Co. .	124
Heltzel Steel Form & Iron Co. ....	90, 91
Hendrix Mfg. Co., Inc. ....	68
Highway Trailer Co. ....	120
Hobart Brothers Co. ....	79
Hobbs Corp., John W. ....	130
Hoffman Bros. Drilling Co. .	115
Hough Co., Frank G. ....	16, 17
Hydraulic Machinery Co. .	138
Ideal Reel Co. ....	130
Industrial Cab Co. ....	143
Ingersoll-Rand Co. ....	150
Insley Mfg. Corp. ....	38, 39
Intercontinental Equip. Co., Inc. ....	60
International Harvester Co. 28, 29, 31, 33	
Iowa Mfg. Co. ....	123

Jaeger Machine Co. ....	136
Joy Mfg. Co. ....	87
Kelley Machine Div. ....	104
Kim Hotstart Mfg. Co. ....	141
Koehring Co. . 54, 55, 56, 57	
Laclede Steel Co. ....	81
LeTourneau-Westinghouse Co. ....	47, 49, 51, 111
Levinson Steel Co. ....	93
Lima Works, Constr. Equip. Div., Baldwin-Lima- Hamilton Corp. ....	109
Lincoln Electric Co. ....	139
Lufkin Rule Co. ....	147
Mack Trucks, Inc. ....	70, 71
Maginniss Power Tool Co. .	126

## CM HOISTS

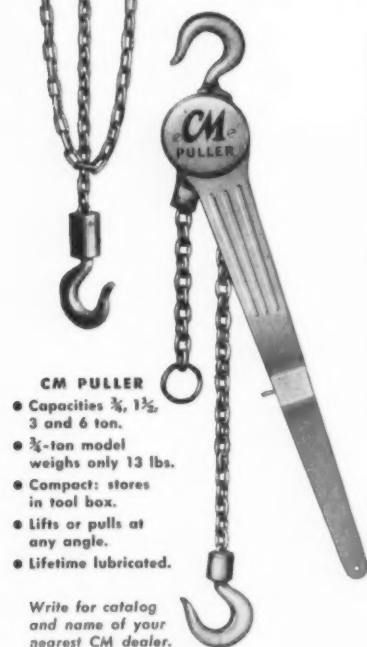
...choice of the  
wise buyer  
who compares



CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light...easy to handle because they are constructed of the strongest alloys of steel and aluminum. Equipped with famous CM-Alloy flexible, welded alloy steel load chain.

### CM CYCLONE

- Capacities from  $\frac{1}{2}$  to 10 ton.
- 1-ton model weighs only 36 pounds.
- 96% efficient—easy to operate.
- Lifetime lubricated.



### CM PULLER

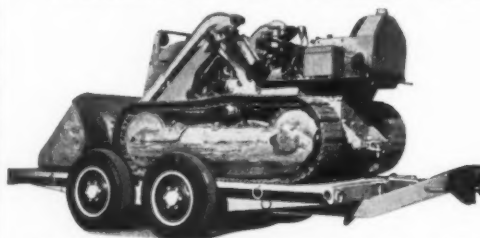
- Capacities  $\frac{1}{2}$ ,  $1\frac{1}{2}$ , 3 and 6 ton.
- $\frac{1}{2}$ -ton model weighs only 13 lbs.
- Compact: stores in tool box.
- Lifts or pulls at any angle.
- Lifetime lubricated.

Write for catalog and name of your nearest CM dealer.



**CHISHOLM-MOORE HOIST DIVISION**  
COLUMBUS McKINNON CHAIN CORPORATION  
TONAWANDA, NEW YORK  
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND  
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.  
For more facts, circle No. 377

## WISCONSIN TILT TRAILER Chosen By Comparison



Model 1020 10 ton only \$1525, fob factory, w/tires & deck, plus tax

Write for details & name of dealer

**WISCONSIN TRAILER CO., 1949 N. 121st St., Milwaukee 13, Wis.**

For more facts, use Request Card at page 18 and circle No. 378

## SWENSON SPREADERS FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE  
OR IN ANY DESIRED AMOUNT  
Lays a Narrow Strip or Full Traffic Lane

Handles all granular materials—salt, cinders, sand, calcium chloride, rock chips. Spreads at speeds up to 30 M.P.H. Clutch-controlled flow; steady or intermittent for hills and intersections.

Write for complete information

**SWENSON SPREADER & MFG. CO.**  
LINDENWOOD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 379

## PRESTRESSED



Placing of Amdek hollow box girders by means of Richmond Lifting Inserts with loads spread and equalized.

## Lifting Inserts for Beams & Girders

Increased use of Prestressed Beams and Girders has led to the development of special inserts for lifting these units from casting beds, and placing them in their final position on the job.

Richmond Screw Anchors can be used where the mass of concrete provides sufficient distribution in width and depth to develop the strength.

Tyloops are used where the width and depth are sufficient for proper anchorage, where the unit has to clear reinforcing steel or other obstructions. Tyloops can be made in special shapes.

Extended Coil Lifting Tyscrus and 4 Strut Lifting Tyscrus are especially designed for thin walled Hollow Girders where the load distribution must be placed in the compression area of the prestressed girder.

All of these Lifting Inserts have actual ultimate strengths of at least twice their working loads in concrete at required lifting strength.



For more information about these and other Richmond Lifting Inserts send for the Richmond Data Book on Lifting Inserts. And if you have any specific concreting problems ask us about them.



For more facts, circle No. 380

CONTRACTORS AND ENGINEERS



Manitowoc Engineering Corp. ....	88	Richmond Screw Anchor Co., Inc. ....	148
Massey-Ferguson Indus. Div. ....	26	Rivinius, Inc. ....	113
Master Vibrator Co. ....	137	Rockford Clutch Div. ....	114
Mayo Tunnel & Mine Equip. ....	122	Rockwell Standard Corp., Transmission & Axle Div. ....	27
McConaughay, K. E. ....	130	Rodgers Hydraulic, Inc. ....	48
McKiernan-Terry Corp. ....	142	Rods Inc. ....	106
McKinney Drilling Co. ....	121	Rogers Brothers Corp. ....	59
McKissick Products Corp. ....	24	Rome Plow Co. ....	126
Meadows, Inc. W. R. ....	115	Ross Porta-Plant ....	147
Mechanics Universal Joint Div. ....	61	Salem Tool Co. ....	110
Midland Machine Corp. ....	108	Shawnee Mfg. Co. ....	106
Miller Tilt-Top Trailer Co. ....	134	Simplicity System Co. ....	25
Mobile Office, Inc. ....	146	Sinclair Industries, Inc. ....	146
Moline Iron Works ....	120	Sinclair Refining Co. ....	32
Monarch Road Machy. Co. ....	113	Smith & Co., Inc., Gordon ....	135
Morse-Starrett Products Co. ....	112	Smith Co., T. L. ....	72
Naylor Pipe Co. ....	77	Soiltest, Inc. ....	46
New England Carbide Tool Co., Inc. ....	140	Stanco Mfg. & Sales, Inc. ....	138
Oliver Corp. ....	18	Standard Oil Co. ....	67
Owen Bucket Co. ....	132	Standard Steel Works, Inc. ....	58
Parsons Company ....	56	Stoody Co. ....	43
Plant City Steel Corp. ....	124	Stow Mfg. Co. ....	114
Power-Pack Conveyor Co. ....	146	Superior Concrete Accessories, Inc. ....	66
Prescon Corp. ....	101	Swenson Spreader & Mfg. Co. ....	148

Swick-Guth Co., Inc. ....	134	Viber Company ....	58
Sylgab Steel & Wire Corp. ....	59	Vibro-Plus Products, Inc. ....	92
Symons Clamp & Mfg. Co. ....	105	Vulcan Iron Works, Inc. ....	52
Syntron Co. ....	133	Wagner Electric Corp. ....	127
Tampo Mfg. Co. ....	110	Waukesha Motor Co. ....	135
Templeton, Kenly & Co. ....	149	Wheeling Corrugating Co. ....	94
Texas Co. (Asphalt) 2nd Cover		Wheel Trueing Tool Co. ....	140
Texas Co. (Lubricants) ....	8, 9	White Mfg. Co. ....	104
Tractor Spreader Co. ....	140	Whiteman Mfg. Co. ....	121
Travelift & Engineering, Inc. ....	46	Wickwire Spencer Steel Div., CF&I Corp. ....	84, 125
Unit Crane & Shovel Corp. ....	60	Winslow Scale Co. ....	108
U. S. Steel Corp., American Bridge Div. ....	107	Wisconsin Motor Co. ....	128
U. S. Steel Subsidiaries ....	107	Wisconsin Trailer Co. ....	148
Van Brush Mfg. Co., Inc. ....	129	Worthington Corp. ....	64, 65
Vermeer Mfg. Co. ....	142	Wyzenbeek & Staff, Inc. ....	110
		Yale & Towne Mfg. Co. 3rd Cover	

## LITTLE FALLS DAM CONTRACTOR FINDS BRUNNER & LAY ROK-BITS BEST *you will too!*



Brunner & Lay carbide Rok-Bits were used exclusively to drill out 48,000 cu. yds. of rock for dam and pumping station foundation excavation and a 4,400 ft. 13½ ft. bore tunnel. They helped the contractor, James McHugh Const. Co., complete the drilling job on time, with costs held in line.

Rok-Bits give longer feeds; fewer bit changes; straight ROUND, easy-to-load holes that increase blasting efficiency. See them at work on a job near you. Phone your dealer, or our nearest plant. You'll see why Brunner & Lay offers the fastest growing line of drilling tools. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 76 progressive years. Plants & warehouses; Philadelphia, Asheville, Birmingham, Dallas, Albuquerque, Denver, Los Angeles, Sacramento, Portland, Seattle, Lachine, P.Q.

District of Columbia water supply system. Contractor: James McHugh Construction Co., Chicago. Supt.: Roy Stickney. Purchasing Agent: John Mergo.



Brunner & Lay carbide Rok-Bits available in these body types—cross, chisel, "X", cutaway, taper socket. Furnished in standard wagon & hand hold drill threads—also 1,000, 700, 600, 400, 200, 15.25, 15.5, 17.50 threads. Wide size range—up to 7" in our Hole-Master.

### PICK YOUR DRILL STEEL ORDER FROM OUR NEAREST PLANT

Shapes & Sizes  
Standard Carbon. Hex.: 7/8, 1; Rd.: 1, 1-1/8, 1-1/4"  
Sectional Carbon. Hex.: 7/8, 1; Rd.: 1, 1-1/8, 1-1/4", 1-1/2, 1-3/4, 2"  
Standard Alloy. Hex.: 7/8, 1; Rd.: 1-1/8, 1-1/4"  
Sectional Alloy. Hex.: 7/8, 1, 1-1/4"  
Intrasel (Alloy). Hex.: 7/8, 1; Rd.: 1-1/8, 1-1/4"

All standard threads.  
Let us recondition your drill steel.



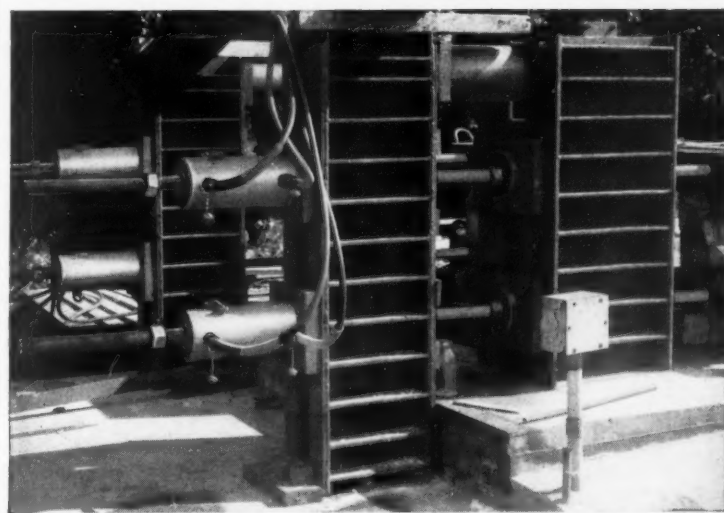
Write for new bulletin Da 1-58.

## Brunner & Lay Products

CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL  
AIR TOOL ACCESSORIES • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

For more facts, use Request Card at page 18 and circle No. 381

## How to Simplify Rigging for Concrete Tensioning Beds



This concrete prestressing bed is equipped with four "Re-Mo-Trol" 100-ton center-hole hydraulic rams operated by an electric pump at 10,000 P.S.I. The rams are mounted on steel frames to which the wire strands are anchored. Note pull-rams through Center-Holes of rams. Holding tension on rods by means of lock nuts at end of ram travel permits resetting for additional "bites"... permits unlimited travel range.  
(Photo courtesy of Goodstone Mfg. Co., Inc., Rochester, N. Y.)

## Simplex Hydraulic Pullers Provide Portability and Unlimited Travel; Make Load Spacing and Balancing Easy

Pre-tensioning and post-tensioning concrete is simple and efficient with Simplex Hydraulic Pullers. Simplex Center-Hole construction permits power to be applied in direct-line pull through a ram to eliminate eccentric loading. At the same time, rigging is simple and economical because complicated back-up devices are not needed.

### LOCKING PULL-RODS PROVIDE UNLIMITED TRAVEL

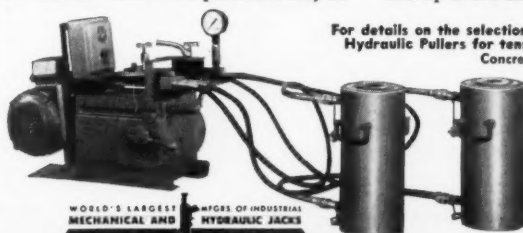
With the Simplex System, pull-rams go through the Center-Hole of the Puller and are attached to the pulling tangent holding the wire strands. The puller, braced against a stationary mount, moves the rods and tangent forward with direct, uniform pull. Unlimited travel may be obtained by locking the threaded pull-rams in tension with a lock nut after the full stroke of the ram is completed. The ram is then reset for another "bite". The procedure may be

repeated as often as necessary, limited only by the length of pull-rams used.

### LIGHT WEIGHT UNITS ARE EASY TO MOVE AND PLACE

Two or more pullers may be mounted to handle any installation for the production of Double-Tee, Slab or Channel members in permanent beds or at the job site. The relatively light weight of Simplex units permits easy movement from one bed to another and easy alignment for proper spacing. This provides self-equalizing, uniformly balanced pulling of either single or multiple strands or cables.

Simplex "Re-Mo-Trol" units consist of High-Pressure Rams actuated by hand, air, electric or gasoline powered pumps. Standard rams with 10" stroke are available in 60 and 100 ton models and with 22" stroke in a 100 ton model. Special units are available up to 600 ton capacity.



For details on the selection and application of Simplex Hydraulic Pullers for tensioning concrete, write for Concrete Bulletin

2 100-ton Simplex "Re-Mo-Trol" Center-Hole Hydraulic Rams actuated with Electric Powered Pump. Note 2 Shut-off Valves for manually controlling even travel of the 2 Rams.



TEMPLETON, KENLY & CO.

2511 Gardner Road, Broadview, Illinois

For more facts, use Request Card at page 18 and circle No. 382



### Gottshall re-elected president of Atlas Powder

Ralph K. Gottshall has been re-elected president and elected chairman of the board of Atlas Powder Co., Wilmington, Del. As chairman of the board, Gottshall succeeds Isaac Fogg, who retired but will remain a director, a member of the finance committee, and chairman of the committee on audit.

At the same time, senior vice president Edward J. Goett was elected executive vice president; Edward J. Massaglia, vice president and general manager of the newly consolidated chemicals division; Robert J. Reilly, treasurer and secretary; and John H. Leary, assistant treasurer and assistant secretary.

### Mobile testing lab tours entire nation

A completely equipped mobile trailer laboratory—designed, built, and equipped by Soiltest, Inc., Chicago—is making a tour of the United States. The laboratory makes possible engineering testing of building sites and road foundations, as well as quality control of building materials such as cement, concrete, and asphalt, on the job site. It contains 135 pieces of equipment, and some 30 separate tests can be performed on soils, concrete, cement, and asphalt.

The laboratory, after appearances on the West Coast, is moving east to Phoenix, Albuquerque, Fort Worth, Dallas, Oklahoma City, Kansas City, St. Louis, and back to Chicago for local visits in Illinois and Indiana. It will then proceed to the East where it will be exhibited at various engineering schools and government installations. It will be in New York City during the annual meeting of the American Society of Civil Engineers in October.

### How three Eastern drillers

## PARLAYED 3 DRILLMASTERS INTO 18

### with big profits from the I-R DOWNHOLE drill

These three case histories tell a story that is vitally important to anyone engaged in blast hole or water well drilling. If you want to improve your profit picture in a growth business, it will pay you to look into the many exclusive advantages of the I-R Drillmaster and DOWNHOLE drill. Ask your Ingersoll-Rand representative for complete information, or send today for a copy of Bulletin 4179.



**Sullivan Trail Coal Co.**  
West Pittston, Pa.

To speed coal stripping operations at a number of separate mining properties, Sullivan Trail purchased its first I-R Drillmaster on June 7, 1955. This was a TRUCM rig, mounted on a 6-wheel highway truck and equipped with the revolutionary I-R DOWNHOLE drill. The speed with which this unit penetrated the hard and broken rock overlaying the coal strata made an immediate "hit"—and its ability to quickly change over to straight rotary drilling for the shales and less abrasive formations made it even more desirable. The investment proved so profitable that two more TRUCM units were purchased on Feb. 3, 1956—and still another, on Nov. 2, 1956! This fleet of four rugged and highly mobile units proved the ideal solution to all jobs where frequent over-the-road movements were required. And for the large stripping operations, where one drill could be kept on the job most of the time, two crawler-mounted DM-3 Drillmasters were added on Aug. 8, 1957. All six of these heavy-duty blast hole drilling rigs are equipped with I-R DOWNHOLE drills and long-lasting Carset Bits—an unbeatable combination for lower cost per foot of hole.



**C. S. Garber and Sons**  
Boyetown, Pa.

This contract driller purchased his first TRUCM Drillmaster unit on Jan. 25, 1955—primarily for blast-hole drilling on quarry jobs where fast moves were required from one quarry to another. Equipped with the I-R DOWNHOLE drill, it set entirely new standards of performance and costs. Then they tried it on a water well job—with such phenomenal success that another TRUCM unit was ordered on March 23—and two more on June 7 of the same year! The profit potential of these machines for water well drilling soon made this a major use of the DOWNHOLE drill, and business boomed to the point that two additional TRUCM units were added to the Drillmaster fleet—in April and July of 1957. Today, these six I-R Drillmasters, with I-R DOWNHOLE drills, are meeting all requirements for a greatly increased business in both quarry and water well work—an increased work load for which the machines are largely responsible. The ruggedness and roadability of the TRUCM mounting makes it ideal for contract drilling where you're here one day—and miles away the next.



**New Jersey Drilling Co.**  
Madison, N. J.

Today, this company is one of the largest and most successful contract drillers in the State—operating a fleet of six I-R Drillmasters for both quarry and water well work. This "success story" really began only a little over three years ago. On May 25, 1955, to be exact—the date on which they purchased their first DM-2 crawler-mounted Drillmaster with I-R DOWNHOLE drill. Here, too, it was used initially for blast hole work in quarries—then applied to water well drilling. This proved so profitable that another DM-2 was purchased on Nov. 9, 1955. And in April, 1956, a TRUCM unit was obtained for use solely as a high-speed, highly mobile water well drilling rig. As business and profits increased, two more DM-2s were purchased—in July and August of 1956. And on Sept. 17, 1957, the entirely new TRUCM-3 unit, on I-R's specially designed Crane Carrier vehicle, completed the present Drillmaster fleet. All six units use the I-R DOWNHOLE drill—the ideal setup for hard rock water well drilling. To prove the point, one TRUCM-3 unit drilled 50 wells in granite in 3 months, averaging 100' per day.



**Ingersoll-Rand**  
5-866 11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

For more facts, use Request Card at page 18 and circle No. 383

### General Tire news

Fred L. Gullledge has been promoted to southeastern manager of special-purpose tire sales for The General Tire & Rubber Co., Akron, Ohio. A former Baton Rouge territory salesman, Gullledge replaces Roy Simpson, who is now national manager of off-the-road tire sales. Gullledge will make his headquarters in the Atlanta division offices.

At the same time, Richard E. Gardner has been appointed West Coast division manager of building materials, with headquarters in Los Angeles.

Gordon R. Lichtwardt, former Charlotte territory salesman, is now manager of passenger tire sales for the same territory. Dave Smukler is the new manager of truck tire sales for the Los Angeles division. He replaces Art Harris, who has been transferred to the firm's defense products division.

Floyd A. Yocke has been made manager of camelback and repair material sales. The former Akron division manager of truck tire sales will continue to make his headquarters in the home office.

Raymond H. Fast has been promoted to Denver division manager. He was formerly a special representative for the firm's retail stores department.

The new assistant division manager of the Los Angeles division is George A. Cole. He will be responsible for passenger tire sales.

George E. Bowling has been promoted to manager of truck tire sales for the Akron division.

### Laclede opens Tampa plant

Laclede Steel Co., St. Louis, Mo., opened its new steel-fabricating plant in Tampa, Fla., with the arrival of a first barge load of 1,100 tons of reinforcing steel, from the Alton, Ill., plant. The new plant, with rail, shipping, and truck-loading facilities, has Robert D. Edwards as plant manager.



# "Fast And Tough As A Texas Jackrabbit..."

Our Job-Hopping Trojan 154 Services Three Loading Areas—  
Keeps Trucks On The Move."



"The Trojan 154 is the spearhead of our operation," says Theodore Collora, President of Atlantic Gravel Co. Not only does it charge the hopper in one area, it handles all the truck-loading in two other areas located a quarter of a mile away . . . and they come in a steady stream! It's nothing for the '154' to handle a minimum of 10 trucks an hour and still find time for other work around the plants . . . And, there has been nothing but normal maintenance and no downtime since its purchase in December 1957 . . . Operator Dick Gant said, "The '154' is worth its weight in gold . . . It's easy to handle and operates fast . . . I really get around in this machine" . . . We say, "Action-Test" the Trojan 154 . . . Your local distributor will gladly arrange both the time and place that best suits your own working schedule.



Complete, detailed brochures are now available on the Trojan line. For your material write to Department C-9 Contractors Machinery Div., The Yale & Towne Mfg. Co., Batavia, N. Y. or San Leandro, Cal.



**TROJAN\***  
\*REG. U. S. PAT. OFF.

**TRACTOR SHOVELS**

**YALE & TOWNE**

**2 & 4 Wheel Drive Front End Loaders**

CONTRACTORS MACHINERY DIV. THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 384



Michigan excavated this 26 x 32 ft basement through wet, sandy clay in 2 hours.



Torque converter helps operator start and stop the 100 ton tow gently and safely.

Two new "profit jobs" for rubber:

## basement digging, heavy drawbar work

This "Michigan" Tractor Shovel has in the past year dug over 80 basements!

It has, in the same period of time, moved over 100 buildings—some of them 5 miles or more—stores, two and three story houses, even a church.

Its work schedule on these assignments has totalled 50 to 60 hours a week, year-around... yet, despite the heavy demands, it has lost work-time on only five days since purchase in June, 1957.

### Digs 220 cu yd basement in 3½ hours

"I believe a Michigan could dig basements profitably for almost every contractor in almost every part of the country," says the basement foreman for the machine's owner, Schuette Movers of Milwaukee, Inc. "It digs faster in light clay than any other rig I've ever seen. It works well in medium clays, topsoil, gravel, silt, common earth, and most rocky or sandy mixtures. Typical 50 x 30 x 4 ft excavation takes about 3½ hours—including stripping of topsoil and piling of excavated material next to the hole."

### Tows 100 ton load at 8 to 10 mph

"Michigan is a natural for towing very heavy loads too," says Schuette's project superintendent. "We use

our 127 hp four-wheel-drive Model 175A to tow buildings weighing, with the dolly supports, 10 to 200 tons each (and sometimes more)! It's a real test for any prime mover, and one successfully passed by the Michigan on over 100 occasions. The machine has no trouble pulling loads uphill or over the highway. It moves buildings 8 to 10 mph on open roads. In town, wires, trees and spectators slow us down; but we still complete a typical one-mile move in about 2½ hours. Michigan's fine maneuverability, good traction and excellent all-around visibility make our work faster and easier. Torque converter lets our operators move at slow, steady speeds without jerking or slipping the clutch."

### Replaces back-hoe, crawler-dozers, all-wheel-drive trucks

Other advantages: the Michigan does no damage to paved roads. It drives everywhere without permit. It works full-time, without the limitations of a back-hoe, crawler or big wrecker-truck—all machines formerly used by Schuette for basement excavation or house-moving. It does a host of odd jobs which simplify house-moving. Levels slopes, for instance. Builds roads across fields. Fills holes to provide

smooth going. Lowers roadbeds temporarily when overhead wires cannot be removed. Backfills old basements. Rough-grades around new foundations. Lifts steel beams and dollies. Winches buildings into final position. Plows and truck-loads snow. Drives job-to-job, averaging 15 to 25 mph in traffic.

"This Michigan is by far the best Tractor Shovel we've seen," says Clifford Schuette, company president. "Distributor service good. Clark financing arrangements very satisfactory!"

Let us show you—through a free, no-obligation demonstration—how a Michigan Tractor Shovel can cut your costs on tough loading, digging, or towing jobs. Eight models, 42 to 335 hp, 16 cubic feet to 6 cubic yards, to choose from. For details, write us direct. Or see your local Michigan Distributor.

Michigan is a registered trade-mark of

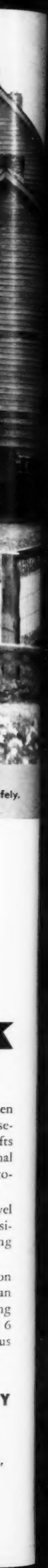
**CLARK EQUIPMENT COMPANY**  
Construction Machinery Division

**CLARK  
EQUIPMENT**

2407 Pipestone Road  
Benton Harbor 8, Michigan  
In Canada: Canadian Clark,  
Ltd., St. Thomas, Ontario

For more facts, use Request Card at page 18 and circle No. 385





fely.

K

en  
se-  
fts  
hal  
o-

rel  
si-  
ng

on  
an  
ng  
6  
us

Y

V  
O  
L  
S  
S  
S  
S  
S